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Lumleian Lectures
ON
EPILEPSY.

The Lumleian Lectures, 1928, delivered at the Royal College of Physicians of London

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LECTURE III.*

Delivered on March 29th, 1928.

THE clinical features of epilepsy have been so brilliantly and fully described by so many writers, from very ancient times downwards to the present day, as to forbid any recapitulation of them in these lectures. There are, however, some details to which I wish to call attention, because they have a bearing upon the argument which I have raised as to the cause of epilepsy, and because some of them have recently received important attention in the literature of this subject.

MENTAL DETERIORATION.

Though commonly met with in epilepsy, mental deficiency and progressive mental failure are no necessary associates of this disease. For the highest mental attainments throughout a long life have often accompanied a recurring epilepsy of life-long duration. It is most commonly seen in epilepsy commencing in childhood, but it may accompany epilepsy that comes on at any time up to old age. It is often seen in the organic epilepsy of childhood both from that associated with agenesia of the brain and that from local vascular and encephalitic lesions. It seems to have no relation either to the nature or the severity or to the frequency of the epileptic attacks, and one meets with progressive mental degeneration in patients in which the attacks are neither severe nor frequent, and it is often completely absent in patients with severe and frequent attacks. It has been said to occur more often with frequent minor attacks, but this is certainly not the case. Gowers emphasised this fact years ago, and the description of pyknolepsy which I gave in my last lecture proves it. In some cases the mental deterioration precedes the appearance of epileptic manifestations by months or even years. From these facts it is quite clear that mental deterioration in association with epilepsy is certainly not caused by the occurrence of fits. Gowers places it in exactly the right position when he says: "Mental failure is determined by a factor which is related to the ultimate cause of the disease and not to the developed characters of epilepsy." Put in other words, this means that there is another factor besides the epilepsy-producing factor in those cases which present mental deterioration. As the fundamental causes of mental deterioration in such conditions as dementia præcox and other alien disease are at the present time held to be disorders of metabolic and endocrinic function, by which the nervous system is deprived of activators or disturbed by unusual products of metabolism and its function thereby progressively deranged and abrogated, it is easy in arguing that epilepsy is a metabolic disorder to add a further metabolic disorder, similar to that which is hypothesised as the cause of dementia præcox, in order to account for the association of mental deterioration with epilepsy in some cases. I have already referred to the clinical association of epilepsy with dementia præcox. It is unlikely that a metabolic disorder would be exactly the same in every subject. It is likely that the different aspects which epilepsy and the allied maladies which I have here mentioned may present are determined by differences, sometimes quite slight, in the underlying metabolic disturbances.

* Lectures I. and II. appeared in THE LANCET of March 24th and 31st respectively.

JACTITATION AND MYOCLONUS.

I have already spoken of these phenomena in my first lecture. I mention them again to emphasise that the two conditions are essentially the same, for I have watched a patient in which the simple jactitation passed into the bulky and shock-like myoclonus, and I entirely support Muskens in his recent opinion that myoclonus-epilepsy is not a blend of two diseases—not a coincidence of epilepsy and myoclonus in the same subject, but that myoclonus is a characteristic manifestation of epilepsy and simply an exaggeration of jactitation. Jactitation is a common phenomenon of epilepsy. It is often seen in that form of epilepsy which goes under the name of infantile convulsions. It is characteristic of the epileptic state of uræmia. It is a common event as heralding an impending attack in idiopathic epilepsy, but it may occur from time to time during the interparoxysmal period. It may occur continuously throughout the whole of the interparoxysmal periods except during the deepest sleep and then constitutes the clinical entity of "epilepsia continuans." Perhaps it may occur alone and present a picture of continuous epilepsy without paroxysms. In its major form it is usually continuous and associated with convulsive paroxysms and has been called "myoclonus-epilepsy." These are the only manifestations of epilepsy which can occur without cessation and without limit of duration. These two conditions are here reported, I think, for the first time, occurring in one limb together with local convulsion and local paralysis in a patient in whom the existence of a local lesion of the brain, though presumptive, was almost unchallengeable.

EPILEPTIC PARALYSIS.

Todd's paralysis, called by him "epileptic hemiplegia," and afterwards "post-epileptic paralysis," may occur with any form of epilepsy whether idiopathic, organic, or symptomatic, but it is more evident in connexion with local attacks. It was explained by Todd as a condition of exhaustion following the severity of the convulsion, but it soon became evident that it did not necessarily follow even the most severe convulsion or series of convulsions, and that it may be absolute after a very slight convulsion. Hughlings Jackson referred it to a condition of inhibition, and Gowers pointed out that it was apt to follow upon a local sensory attack commencing in the limbs. Except in its mildest degrees Todd's paralysis is accompanied by the well-known signs of involvement of the pyramidal system. I wish to emphasise as a fact that simple paralysis is one of the essential manifestations of epilepsy, not dependent upon, nor in train of, any other epileptic incident, and that it may be the sole manifestation of an epileptic attack just as the paralysis of migraine usually is the sole manifestation of the migrainous attack in which it occurs, I have had two epileptic patients who had many attacks of sudden onset of local paralysis which was absolute for a short time and soon passed away. Now and again these attacks of simple paralysis were accompanied by a local aura which clearly revealed their nature, but most often the paralysis constituted the whole of the attacks. Both these patients had occasional attacks of severe general convulsion.

I will now give the details of a fascinating case which illustrates the nature of epileptic paralysis, and which shows further details of interest which indicate that our conception of epilepsy should be a very broad-minded one. I must preface this case by saying that skiagraphic examination showed a densely opaque, very sharply defined object, about the size of the top of my thumb in the subcortex of the left central region, just beneath the centre for the right hand. It was probably a heavily calcified tuberculoma.

This patient was a woman who at the age of 17 years commenced to have general and somewhat severe epileptic attacks at night. These occurred with a very regular frequency of once every six months for the next 20 years,

665273

with the exception that during her three pregnancies she had never had an attack. In a few of her attacks it had been noticed that the attack began on the right side and this had struck the attention of her husband, because nearly all of her attacks began on both sides and all over. Her health had otherwise been unimpeachable. Here was a very typical condition of idiopathic epilepsy, one would have thought, with its strictly nocturnal incidence, regular periodicity, and cessation during pregnancy. At the end of 20 years, in 1922, this patient had a difference with her husband and was for some days distraught with grief, and during this time she had an attack of local convulsion in the right hand without any impairment of consciousness, and this was followed by other attacks of like nature with increasing frequency, until when I first saw her she was having attacks at regular intervals of 20 mnutes night and day, and in this condition she was admitted into the National Hospital.

The attacks commenced by the patient calling out that she had "horrible pain" in the right hand which showed slight tonic spasm followed by clonic spasm of no great intensity, which lasted some three minutes. The spasms spread slowly up the arm, but never higher than to cause a partial involvement of the deltoid with slight abduction at the shoulder. Never did the convulsion spread to the face, tongue, trunk, or lower extremity. Nor was there any loss of consciousness nor aphasia. There were never at any time any signs of raised intracranial pressure, nor were there any objective disturbances of sensibility, even in the right hand.

Partly because I had surgical measures in my mind, and partly because Dr. Wyllie, who was then my house physician, begged that he might be allowed to continue investigations upon these attacks, and that I should not spoil so beautiful a case for demonstration by medicinal treatment, this patient received no treatment at all. In a little while, with the regular continuance of the attacks, it was noticed that the hand and arm were weak between the attacks, and then were completely paralysed between the attacks, the paralysis spread slowly to the tongue and face, but there was never the least trace of aphasia, and it spread also to the leg, foot first. In the course of a fortnight this patient had developed an absolute and stony hemiplegia with all the signs of pyramidal involvement well marked, notwithstanding that there had never been the least sign of convulsion either in face, tongue, or leg. So far as these regions was concerned, the condition was one of simple epileptic paralysis as the isolated result of the epileptic attacks. Some little time later the attacks suddenly ceased and thereafter the paralysis of tongue, face, leg, and arm in that order lessened and completely disappeared, the abdominal reflexes returned, and even the extensor response in the plantar reflex had changed to normal by the time she left hospital six weeks after her admission.

Six years later, just before Christmas of last year this patient walked into my consulting-room. She had had three fits in the six years of her old general nocturnal type. She had recently had a fit in the daytime, commencing in the right hand and followed by weakness, and had come to me in fear of a repetition of the events of 1922. I found that she had for some months been dragging the right leg in walking and there was a definite extensor response in the right plantar reflex. Some extension is now occurring from her local lesion.

I wish to call attention in this case particularly to the amazing effect which a strong psychic disturbance had upon even an organic epilepsy. It changed the type of the attack from an infrequent general and nocturnal attack to a very frequent and succinctly local attack. No one can doubt the influence of strong emotional factors upon every variety of epilepsy, and it is likely that such influences act by disturbing metabolism. If this case had only been treated by psychotherapeutic measures, what a grand success it would have made for psychotherapy in epilepsy.

This patient called out with horrible pain with the commencement of each local attack. There was no spasm as would cause any such pain, for I have repeatedly seen much more severe local fits which caused no discomfort to the patient. Therefore this pain is likely to have been a sensory manifestation of the local attack—in other words, an aura. But it could not have arisen in any higher structure than the optic thalamus, and yet the lesion in this case was undoubtedly subcortical. This I submit is an expression of a general principle that may be applied to epilepsy, that the disturbance of the cortex may secondarily give rise to phenomena which strictly belong to lower regions of the nervous system. When Spiller and others use the term "subcortical epilepsy," they do not prove nor do I think they mean that epilepsy can result from other than a cortical disturbance, but that the manifestations belong to the presumable function of subcortical levels.

Lowering of Blood Pressure.

I have argued that a lowering of blood pressure is a characteristic manifestation of the attacks of epilepsy and of the allied maladies which I have here referred to. Its constant occurrence in the attacks of migraine and in vaso-vagal and syncopal attacks is unchallengeable. But in epilepsy it has been, and still is, a highly controversial matter. The ancients held for vaso-constriction in the brain as the immediate cause or, at any rate, the accompanying feature of the epileptic attack, and so do some of the moderns—Foerster, for example, in spite of the work of Leonard Hill and the more recent investigations of Florey, which prove almost beyond argument that there is no vaso-constrictor mechanism for cerebral blood vessels and that if there were it could have little or no influence upon local cerebral circulation. Bossard and many of the French School hold that there is an initial fall of blood pressure, and with them I agree. Though Foerster in his many experiences of the change of colour of the exposed brain at the onset of convulsion is quite sure that vaso-constriction occurs, yet Foster Kennedy's description of this same event convinces me to the opposite effect. He says:—

> "We were looking at the surface of the brain exposed by operation, when a sudden pallor occurred and the patient began to move in general convulsions, but the pallor was no sooner remarked by us than it was replaced by engorgement of the surface and bulging of the brain, due to the general venous engorgement produced by the convulsion."

This does not seem to me to be the description of vaso-constrictor action, but rather that of a sudden drop of blood pressure followed by a rise resulting from the convulsion. I do not wish to place lowering of blood pressure as the immediate cause of the epileptic attack nor of any of the epileptic manifestations except the blanching of the brain and the skin, though this may in truth be the real relation, but I think it is a common manifestation of the commencement of the epileptic attack, and I wish to bring epilepsy into line with the other epilepsy-like maladies in which such lowering of blood pressure does occur.

The Site of Origin and Nature of Epileptic Processes.

The site of origin of epilepsy seems definitely confined to the cortex of the cerebral hemispheres, since every local lesion that I have seen productive of epilepsy has been in or near the convolutions or has been in such a position as allows of some secondary process, such as œdema or ventricular cystation, to affect the convolutions. Thus, a tumour of the pons by obstructing the aqueduct may give rise to hydrocephalus, and this in turn may produce fits, either general, unilateral or local. I have at the moment of writing a case of a neurofibroma growing from the right eighth nerve underneath the tentorium with a four years' history and a recent advent of right-sided convulsions, but there is intense papilloedema, and it is obvious that tissue dislocation at the foramen tentorii has produced distension of the lateral ventricles, of which the epilepsy is an expression.

Some authorities, however, hold an opposite opinion. Spiller, for example, writes: "There can be no doubt that, even in man, epileptic attacks may be caused from subcortical centres. These attacks are chiefly of tonic character, but clonic spasms have been observed," and after discussing the names, "spastic epilepsy" used by Knapp, "extrapyramidal epilepsy" used by Sterling, and "striate epilepsy" used by Wimmer, and finding these unsuitable employs the term "subcortical epilepsy" for tonic fits in which pyramidal signs are absent, and he proceeds to describe two cases which were not examined pathologically, but which were really of extreme

clinical interest. Spiller remarks several times in his paper how like these two cases were to cases of tetany, with the carpo-pedal spasms, the severe cramping pain, the hot paræsthesiæ and the advent of the fits on handling of the limbs. But it does not seem to strike him as it strikes me, very forcibly, that his two cases were indeed very beautiful examples of tetany. They did not present any feature which is not well known in tetany. In one of his cases the fits were confined to the hand and leg of one side which were paretic, but so high an authority as Frankel-Hochwart has reported two cases of spasm confined to one side, in which all the true reactions of tetany were present. There is one point of advantage in the description of these cases by Spiller, and it is to bring forcibly to our notice that there is a class of case which is called epilepsy by one authority and tetany by another, and to suggest, as I have already done, that these maladies are not very far separated, and that they may merge clinically the one into the other.

The upholders of a subcortical origin for some epilepsies maintain their arguments rather from the standpoint that the symptoms of tonic fits are such as they would expect to result from disturbance of function in the basal ganglia, because they show in some degree the same kind of rigidity as do lesions of the basal ganglia, rather than that they have seen these fits result from proved lesions of the basal ganglia.

We are here on very debatable ground, for no one will deny that in the disease lethargic encephalitis the strangest varieties of paroxysmal phenomena often appear, and this disease affects the basal ganglia in particular. Nor can any one affirm that epileptic manifestations or anything resembling them, result with any frequency from this disease. According to a theory of epilepsy at present much in vogue, which I shall refer to later on, a disturbance of the cerebral cortex may give rise to a secondary disturbance in any of the lower levels of the nervous system and the symptoms resulting, may correspond with our ideas of what disturbance of the lower centres should cause, but this disturbance of lower centres, though it be the only phenomenon exteriorised, does not prove that the starting-point of the attack is in such lower levels.

I will now call attention to a newly described symptom of epilepsy which is held to have its origin in the putamen and optic thalamus. It was described by Knapp in 1919. The case is one of the usual type of general epilepsy in a child. The fits which have occurred for years perhaps becoming increasingly frequent. Speech becomes slow and difficult and the limbs and trunk become rigid and show perversity and slow spontaneous movements, and there is facial grimacing and emotional over-activity. The picture comes to exactly resemble that of the malady which Gowers called "tetanoid chorea," and which Wilson has now named hepato-lenticular degeneration, in which there are conspicuous lesions in the lenticular nucleus. And Knapp says here, too, there is a lesion in the same position. But Knapp treated his patients with bromides and stopped the fits and little by little all the symptoms of the lesion of the lenticular nucleus disappeared and the patient resumed the normal. He stopped treatment. On came the fits again and on came the same lenticular nucleus syndrome. This is amazing, and it will remind you of my story of epileptic paralysis becoming complete for weeks and remitting entirely for years with the cessation of the fits.

Here is a characteristic case of Knapp's syndrome which was recently under my care which convinces one of the truth of Knapp's picture and leaves one in a position to choose whether the cortex or the basal ganglia were primarily at fault.

A boy, aged 12 years, of precocious intelligence and good physical development, in whose family there had been several cases of epilepsy, was brought to me suffering with frequent fits of two years' duration. He had had a very few general fits, but nearly all his fits, which often happened a dozen times in one day, commenced in the left foot with spasm. If he was thinking about it when the fit started he could nearly always stop the fit by a powerful dorsiflexion of his foot, but if he was absorbed in any act or event and let the fit get as high as his knee, he had no power to arrest it and it spread to the arm and became general with loss of consciousness. He could excite a fit at will by tickling the sole of the foot, and we were able to do so also by almost any form of stimulation of the foot. He was successfully treated for the time at the National Hospital and returned to school where, some time after, he had a severe bout of frequent fits and was readmitted to hospital mentally very dull with a speech so slow and clumsy as to be almost unintelligible and with great spasticity of all the limbs with slow spontaneous movements and facial grimacing. The clinical aspect was just that of lenticular degeneration and the diagnosis was changed to one of organic disease of the basil ganglia. Treatment with luminal stopped the fits and within three weeks of their cessation this boy had returned to the normal. He subsequently went back to school and carried on well for some five months, when a sudden advent of severe fits proved fatal so rapidly that the parents had no opportunity of communicating with me, nor did I hear of the event until some weeks afterwards.

Now there was nothing about this case which suggested more than a familial idiopathic epilepsy of local and reflex type until a severe exacerbation of the attacks resulted in a lenticular syndrome so severe that we never dreamed of its recovery. Yet recovery was complete and remained so long as the convulsions were kept in abeyance. There was nothing in the nature of these fits to suggest anything but a cortical origin. They were local tonic-clonic fits without loss of consciousness, which could be arrested by strong voluntary effort and which could be produced reflexly—the very type of what we consider to be epilepsy of cortical origin.

In his recent study upon epilepsy Foerster expresses the opinion that every part of the nervous system can be the starting-point of an epileptic attack. It is certain that in horses and horned cattle the stimulation of cicatrised wounds, especially of the horns, hoofs, and withers, may give rise to epileptic fits, and a very few parallel instances in man are recorded by Gowers. This fact, however, does not necessarily mean more than that the immediate excitant of the fit may be peripheral, for the point of origin may be cortical. Gordon Holmes, writing upon epilepsy from local lesions of the brain in the Savill Memorial Lecture for 1927, points out how nearly every local epilepsy of a limb comes to being a reflex epilepsy. The patient will wear his hand in his pocket and take various other measures to protect his epileptic limb from jars and knocks and sensory stimulation lest a fit should result, I entirely agree, and would extend Holmes's principle to the local epilepsies without organic lesion of the brain. I have more than once caused the first reflex fit in an epileptic foot in my endeavours to investigate the plantar reflex, and often the patients have begged me to desist, for they felt that a fit would come on if I continued. Gowers reported the case of a man who had his left forearm painfully bruised in an accident. A few days later a local fit occurred in this arm accompanied by pain similar to that felt after the accident and these attacks continued, but later on this patient developed headache and papillœdema and signs of a local lesion of the right central convolutions. The injury to the arm had merely served to excite the first attack and had perhaps determined its local colour—the pain. In the vast literature upon reflex epilepsy many examples have been recorded in which fits due to a lesion of the brain could be brought on by peripheral stimulation, and therefore there seems to be no difficulty in accepting a cortical origin for all reflex epilepsy.

In the spinal animal and in the decerebrate animal tonic-clonic spasms can be elicited by the administration of convulsant poisons. Therefore, the origin of epilepsy-like fits in the spinal cord and brain-stem is theoretically possible. But if such events occur as spontaneous clinical phenomena in man they must be so rare as to have escaped the observation of most of the workers on epilepsy. The contention of Horsley and others that the cerebral cortex is necessary for the expression of the clonic component of the

epileptic fit is negatived by the work I have just mentioned, but it has recently been revived by Dandy, who asserts that he was unable to produce anything but tonic spasms in the decorticated dog. The ancient experiments of Nothnagel, Schroeder, and others of the production of epileptic manifestations by irritation of the pons and medulla is open to the objection that afferent paths were likely to have been stimulated and a reflex epilepsy produced in this way.

The oft-recurring statement which one finds in the literature that hæmorrhage or tumours of the pons or cerebral peduncles have repeatedly caused epileptic attacks either unilateral or bilateral, is unfortunate. For the spasms resulting from the tearing-up of the central nervous system by hæmorrhage or by any other mechanical disturbances have nothing to do with epilepsy. Tumours of the pons and of the peduncles so easily cause distension of the ventricles and high intracranial pressure, both of which are potent causes of convulsion. When Foerster describes the epilepsy typical of these lesions with bilateral tonic spasm, head retraction, opisthotonus, tonic ocular spasm and stertorous breathing, I call to mind the many cases in which I have seen this picture, where the tumour has been just anywhere you please, provided the ventricular distension and high intracranial pressure were present. In answer to Spiller's summing-up, "that there can be no doubt that even in man epilepsy can be caused from subcortical centres, and these attacks are chiefly of tonic character," I would reply that this may be so, but that the clinical examples must be very rare. Most of the recorded examples are unconvincing and admit of another explanation and, lastly, convulsion consisting of tonic spasm alone is common in every variety of epilepsy. It is least common in organic epilepsy and most common of all in the minor attack of epilepsy.

The cortical origin of epilepsy is suggested by the readiness with which convulsion can be produced by electrical and chemical stimulation of this region and, in connexion with the latter, I may mention two clinical facts which suggest that epileptic fits are sometimes caused by surface irritation. The first example is that of spontaneous subarachnoid hæmorrhage from a leaking aneurysm of the circle of Willis. In this condition one meets with fits, not when the blood is first effused and not when the symptoms are acute, but after days or weeks when the remains of the blood are turning brown or yellow. These attacks seem never to recur after the patient recovers. The other example is that of uræmic convulsions. No one, I think, who has witnessed the immediate cessation of severe uræmic convulsions, when the cerebro-spinal fluid is drained by lumbar puncture, can have any other impression than that the fluid withdrawn contained some irritant which was causing those convulsions.

The exteriorisation of the convulsive phenomena of epilepsy is presumably by the pyramidal systems on the ground of the many reported cases in which the advent of a vascular lesion interrupting the pyramidal path on one side in a case of general epilepsy has caused the cessation of convulsion on the corresponding side. But there is certainly another path, for Economo and Karplus have shown that complete division of the pes pedunculi on both sides does not prevent the occurrence of cortically induced convulsion, and therefore such convulsion must be exteriorised through some mediate strio-tegmental path. There is sound clinical evidence in support of these experiments. But when Wimmer, Dandy, and the upholders of subcortical epilepsy in general contend that the clonic element in convulsion belongs to, and is exteriorised by, the pyramidal system, whereas the tonic spasm is essentially connected with the mediate strio-tegmental paths, we must, I submit, follow Gowers and consider that though clonic and tonic spasm are occasionally dissociated in epilepsy, yet they are so commonly associated and blend the one into the other by such minute gradations as make it difficult to believe that they are not expressions of disorder in the same anatomical substratum. But in this consideration, as in so many of the problems of neurology, we are so apt to forget that the nervous system habitually acts as a whole and not in terms of its individual anatomical structures. Not even in the simple activities of the lowest levels is isolated activity clearly seen, and in the higher levels, and especially in the highest level of the cerebral cortex, it is probable that functional activity which we at the present time presume occurs locally, coinvolves functional activity throughout the whole of that level and possibly throughout the whole of the nervous system.

The Nature of the Epileptic Process.

The most commonly occurring feature in all epileptic symptoms is loss of function. Only with simple epileptic jactitation, and sometimes with a peripheral aura occurring alone, does one see no loss of function. So far as the highest functions of the nervous system which we are accustomed to refer to the cerebral cortex are concerned, the phenomena of epilepsy are, with one exception, unvaryingly those of loss of function. In the epileptic attack there are no counters of thought, but consciousness is lost or impaired. There are no elements of speech, but speech is lost. There is no sensation of an act, but simply of movement. The hallucinations of special and common sensibility which occur commonly have nothing to do with memories of life, but they are vague, crude, and undefinable; tastes and smells, and sensations and visions, which are never experienced except in the epileptic attack. The movements which occur in convulsion have no comparison with those of everyday life if we except the conjugate deviation of eyes and head, they are characterised by a purposeless discord. Even the most narrowly localised convulsion has no counterpart in ordinary usage. The whole train of positive phenomena do not seem to belong to the highest levels of the nervous system.

The one exception is the occurrence of the "dreamy state" and of highly organised hallucinations of hearing and of vision. So far as local lesions of the brain are concerned, these curious psychic states and complex hallucinations are only met with lesions of the uncinate lobe as Holmes has recently emphasised. Local lesions of the auditory and visual convolutions never produce more than crude and foreign hallucinations. I would go farther than Holmes, and say that on clinical grounds all the complex and highly organised hallucinations are part of a "dreamy state," and they are met with only in fits with an uncinate origin. The clinical reasons are the common association of both visual and auditory hallucinations with an aura of taste and smell. If this be so, it is interesting to consider why the uncinate lobe alone is responsible for highly organised hallucinations. Is it because the cerebral hemispheres are phylogenetically mere appendages of the organ of smell, and is it connected with that power which smell is said to have above all other stimuli in suddenly and vividly exciting that variety of cerebral activity which is known as memory?

The epileptic attack often consists in loss of function only as in the simple loss of consciousness which constitutes so many minor attacks, and as in the simple falling attacks, and the simple attacks of paralysis, and more rarely in the auditory attacks with sudden sense of stillness and silence, and the visual attacks with hemianopia only, which Gowers records and of which I have seen two examples. From these considerations the opinion is widely held nowadays that the essential element in the epileptic attack is a sudden loss of function, local or general, in the higher levels of the nervous system, and that all positive phenomena which occur, such as hallucinations and convulsions, are of the nature of "release" phenomena in lower centres. This idea has been largely written upon by Hartenberg and is known as Hartenberg's theory. It is really a very

old hypothesis, for Hughlings Jackson explained the "dreamy state" and highly organised hallucinations which may follow an olfactory aura as the result of loss of control, from the discharge causing the less elaborate sensation, and he also attributed post-epileptic automatism and post-epileptic hysteria to the release of lower centres from control consequent upon the "exhaustion" of the discharge. Gowers placed inhibition, which he said was only a physiological term for arrest of action, in a very high place as the initial phenomena in most epileptic attacks.

Hartenberg's hypothesis seems to be the best working theory for the explanation of epilepsy, though its terms, "inhibition" and "release phenomena," like the "discharge" and "excitation" of the older theories, seem inadequate physiological words appended to very obvious phenomena, of the real nature of which we know at the present time almost nothing. Upon this theory it is interesting to speculate at what levels the release phenomena occur. Gordon Holmes, though he still speaks of excitation and irritation, confines the site of origin of convulsion and sensory disturbance to the cerebral cortex, but limits it to the more lowly elements, afferent or recipient, and seeks thus to explain the simple and crude sensations and the purposeless discord of the movements. Martin considers that the convulsion does not arise in the cortex, and arguing from Cobb's experiments that the tonic spasm of epilepsy is a true tetanus and not a postural tone increase as are most cerebral rigidities, and also from the similarity of the positions assumed by the limbs in epileptic attacks with those obtained reflexly below the lesion when the spinal cord is transected in man, and from the fact that epileptic convulsion, both tonic and clonic, occur in very young, when he presumes the cerebral cortex not to have any function, he states a case for epileptic convulsion as a release phenomenon at the low level of the brain-stem and spinal cord.

I would here suggest, if the theory of "release" be the correct theory, that some of the release phenomena must be of the negative order. Knapp's syndrome, of which I have given you an example, must be due to a loss of function in the lenticular region. The complete loss of sensibility to all forms of stimulation following upon sensory attacks recorded by Holmes must involve complete loss of function at a level not higher than the thalamus. The curious minor attack in which the patient always falls from the standing position in a constant direction, either always forwards or always backwards, and never sideways, so that his forehead or occiput reach the ground first, must be due to a sudden arrest of function at some cerebellar level. Diplopia occurring early in the epileptic attack has been recorded by the most able observers, though it is a rare event and I have never seen it. It cannot in my conception result from any higher level than that of the oculomotor nuclei. The most commonly occurring and obvious of the release events is of spinal level—that of the sphincters. It seems certain, therefore, that as the result of the disturbance of cortical function and possibly in some cases as a primary event, both positive and negative phenomena occur in epilepsy which have their pattern determined by the function of any of the lower levels of the nervous system, and if a sudden lowering of blood pressure be a constant early manifestation of the epileptic attack, as it is of the syncopal attack, this may be described as a negative phenomenon at the level of the medulla.

The headache, vomiting, sleepiness, and general feelings of illness which often follow the epileptic attack call for some comment, since they bear no constant relation to the nature or severity of the attack. They may follow even in severe degree upon a minor attack of a few moments' duration. On the other hand, there are rare cases in which, after the most severe and prolonged general convulsion, consciousness is restored suddenly and the patient is able at once to carry on what he was doing as if nothing had happened. These post-epileptic symptoms must therefore be dependent upon some factor which is now present and now absent and not upon the attack itself. The nature of the headache and its habit in some cases of ceasing suddenly if vomiting occurs, or of ceasing when sleep occurs, and of becoming intolerable if sleep is prevented remind one of migraine and suggest to me that actual swelling of the brain does occur sometimes in the epileptic attack as it certainly does in the attack of migraine, and that this swelling is responsible for these symptoms. Gowers drew attention to the comparative mildness of such symptoms in organic epilepsy even after severe general convulsions as compared with idiopathic epilepsy, and stated that he had never met with post-epileptic vomiting in organic epilepsy.

Treatment.

My experience in the treatment of epilepsy urges me to make a few remarks upon this side of the subject for the reason that I hold views which are not universally accepted, rather than that I have anything fresh to announce. There can be no doubt that the less the life of an epileptic person departs from that of a normal person, the better will be the result of medicinal treatment and the more hopeful the outlook in the end. Therefore, in every case of epilepsy where it is possible, education, occupation, and recreation should continue without restriction whatsoever. So often one sees in a case of epilepsy commencing during school years, rest, removal from school, and cessation of education advised without thought of the fact that a state of mental activity and attention and interest or of physical activity are powerful repellants of the advent of the epileptic attack, so that the habitual epileptic will seldom, or never, have an attack when he is at work. On the other hand, the discouragement of hopes, the abrogation of play, and the despondency wrought of inanition and the feeling that something is wrong and that he is different from other people will produce an effect upon the incipient epileptic that medicinal treatment will scarcely remedy. Even excitement, which is well known as a cause of fits, need not be interfered with. It is better to fortify the patient with a preventive dose before any excitement is to happen and let him go through with it. States of bodily peculiarity and ill-health have so often been held responsible for the onset and upkeeping of epilepsy and the treatment of these considered essential for the betterment of the malady, such as digestive troubles, constipation, ileal stasis, nasal obstruction, and so on. With the single exception of rickets I have never found any such conditions to be real factors, nor have I witnessed their betterment to be accompanied by any improvement in the epilepsy. Some of them are certainly expressions of the same fundamental metabolic state which causes the epilepsy.

Since the introduction of the malonyl-urea compounds for the treatment of epilepsy, of which luminal may be taken as a type, in 1912 their very great value has gained universal acceptance, and the use of luminal has largely supplanted that of the bromides. It has much the same effect and does not cause acne nor dyspeptic symptoms, but there seem still to be some cases which do better on bromides. Whichever drug is used there seems to be no advantage in administering it more than twice a day, nor in using any but moderate doses—up to grs. 1½ of luminal and grs. 20 of sodium bromide. The whole purpose of these remedies seems to be to anticipate and prevent a fit. Therefore it seems useless to give these drugs for the treatment of nocturnal epilepsy except in a single dose at night, or for diurnal epilepsy except in a single dose in the morning, and for epilepsy that occurs both by day and by night, both night and morning. In so much as the attacks occur at regular times and can be anticipated one hour by a dose of the remedy, the epilepsy can be the more successfully treated. The only other remedies which really influence epilepsy are zinc salts and belladonna. There are a few rare cases in which one or other of these remedies are of signal benefit, and these are

generally cases in which both luminal and the bromides have failed.

Status epilepticus, however, is utterly rebellious to the remedies which I have mentioned. There is in this condition the utmost necessity to preserve the bodily nutrition and strength by careful watering and feeding and by the use of stimulants, and this administration should be from the first by the nasal tube. Any remedy which has any depressant effect, such as luminal, bromides, morphia, or chloroform, does more harm than good. There is, however, one newly introduced remedy which was first used at the National Hospital by Dr. Arnold Carmichael, who was then resident medical officer, which is of signal value in the treatment of status epilepticus and it is paraldehyde. This is a stimulant as well as having a most powerful action in checking convulsion. It can be given in large doses, up to eight drachms without ill-effect, and it is readily absorbable from the rectum when mixed with an equal quantity of olive oil. With this remedy I have saved many patients in status epilepticus whose condition was so desperate as to make me believe that they must necessarily have perished in former days when I did not use paraldehyde. I would further recommend the use of paraldehyde in any epilepsy whatsoever in which convulsive attacks are of frequent occurrence.

In conclusion, I may point out that the medicinal treatment here outlined for epilepsy is applicable to every form of epilepsy, idiopathic, organic, and symptomatic, and also to those maladies, migraine, vaso-vagal and syncopal attacks, and so forth, which I have here referred to as closely related to epilepsy.

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THE VALUE OF BISMUTH THERAPY IN SYPHILIS.

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WRITING in THE LANCET (1927, i., 148 and 199) on the use of bismuth in the treatment of syphilis, Dr. T. Anwyl-Davies came to the following conclusion:—

"Bismuth in some way—possibly by some tissue reaction—merely inhibits the disease instead of having a direct curative action on the infection. These experiments suggest that the therapeutic effect of bismuth may not be as satisfactory or as permanent as one might desire."

He bases this opinion on references from the work, both experimental and clinical, of various authorities, especially that of Kolle and his collaborators. According to Kolle,[1] bismuth does not destroy the *Spirochæta pallida*, but cures the specific lesions by producing certain tissue reactions which arrest the multiplication of the parasites. While in no way questioning Dr. Anwyl-Davies's sincerity, nor under-estimating the value of his contribution, we must disagree with him profoundly on several points, and must insist that, by presenting the problem of the therapeutic efficiency of bismuth as he did, he has cast discredit upon a method whose benefits have been universally admitted.

The Case against Bismuth.

Kolle[2] bases his opinion on the following results: rabbits inoculated with a syphilitic virus (Truffi's or Nichols's strain) remained protected from infection for at least 109 days after receiving intramuscular injections of insoluble bismuth derivatives, while those which received injections of soluble salts contracted the disease.

A second series of experiments, however, gave results which to him and to Dr. Anwyl-Davies seemed to contradict the apparent spirochæticidal properties of the insoluble preparations.

Certain rabbits were injected subcutaneously under the skin of the ear with an insoluble bismuth derivative (the double iodide of bismuth and quinine). Four weeks later they received scrotal inoculations of a syphilitic virus. No lesions were produced so long as the bismuth was left in situ, but if the deposit of bismuth was removed by cutting the ear, infection spread and spirochætal chancres appeared in the region of the scrotum. Further, the popliteal lymph glands of the rabbits which had shown no syphilitic symptoms, when inoculated into another series of animals, produced undoubted syphilitic infections. Bismuth had thus not prevented the penetration of the virus into the organism and its location in the popliteal ganglia.

We cannot agree that these results warrant the conclusions which Kolle and Anwyl-Davies have drawn from them, and we are convinced for the following reasons that they do not.

The Spirochæticidal Efficacy of Bismuth.

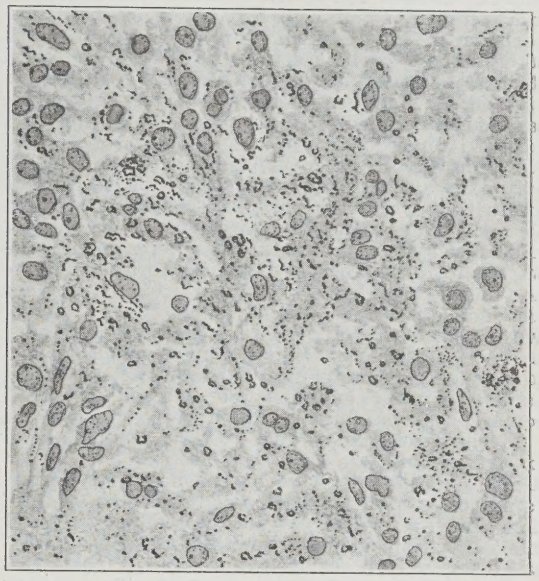
If the evolution of the spirochætes, in the syphilitic lesions of experimental animals which have been given an effective bismuth treatment, be followed day by day, a progressive alteration of the parasite can be readily seen. The spirochætes little by little lose the regularity of their undulations, become rod-like, show moniloform swellings, break up, and become transformed into granules and tiny grains, showing an affinity for silver. Finally, these involuted forms of the parasite are absorbed by the elements of the reticulo-endothelial system, the fibroblasts, and macrophages. This process, which takes place in the course of a few days, coincides with the immobilisation and disappearance of the spirochætes as shown by ultra-microscopic examination. Simultaneously the scrotal lesions diminish in size and are finally completely cured, in a period of time which varies according to the dose, the nature of the bismuth preparation administered and the severity of the lesion. Admittedly spirochætes which can be stained with

silver are still found, more or less distorted, for a considerable time after injection, but they are quite non-virulent when tested by inoculation of the residual nodule into normal animals. On the other hand, the persistence of these non-virulent involuted forms can also be demonstrated in animals treated with novarsenobenzol and certain arseno-bismuth derivatives.[3 4] There can be no doubt, therefore, that bismuth brings about in vivo an involution of the spirochætes which finally results in their destruction (as can readily be seen under the microscope) and a complete loss of virulence. (Figs. 1 and 2.)

FIG. 1.

Section of syphilitic chancre of a rabbit before injection of bismuth.

FIG. 2.



Same as Fig. 1, 3 days after injection of bismuth.

Fournier and Schwartz[5] published in 1926 the report of a series of experiments from which they concluded:—

(1) That insoluble bismuth compounds, metallic bismuth,[6] and certain lipoid-soluble compounds, injected intramuscularly into a rabbit, quite definitely protect the animal against experimental syphilitic infection.

(2) That this protection, as shown by several successive inoculations, varies from three months (for soluble salts) to six months (for insoluble derivatives). In general the duration of the protection has appeared to be proportional to the quantity of bismuth injected, and to depend, to some extent, on the nature of the compound employed, the insoluble derivatives and the metal itself appearing to be most effective.

(3) The animals have, finally, contracted syphilis, which certainly shows that they remained for months protected from possible infection.

This last point is very important. It has been shown that a syphilitic infection, even although it remains dormant, often confers a definite prophylaxis against a trial inoculation carried out with the same strain of virus. If, therefore, in the experiments of Fournier and Schwartz, there had been any such dormant infection; if, in other words, the bismuth had simply prevented the development of visible lesions without exerting any deep-seated sterilising action, it would have been impossible successfully to reinfect these animals at any time. It follows, therefore, that bismuth exerts a real prophylactic action, by destroying the spirochætes at the very site of injection.

Quite recently C. Levaditi and Y. Manin[7] have published similar experiments, which may be summarised as follows:—

(1) In the first series of experiments, rabbits were injected intramuscularly with basic bismuth tartrate (Bi = 74·47 per cent.) in a dose of 0·056 g. Bi per kg. The animals were then infected by scrotal inoculation with Truffi's virus on the 8th, 57th, 111th, and 152nd day after administration of the product.

(2) In the second series, the rabbits were similarly injected with the metallic bismuth in glucose suspension (Bi = 87·5 per cent.) in a dose of 0·043 g. of Bi per kg. (a slightly lower dose than the preceding). These were similarly infected 5 and 73 days after the bismuth injection.

The results of inoculation having been duly noted, the animals were killed, in order to determine the bismuth content of the various organs (method of Girard and Fourneau).

Results.

First series. (Basic bismuth tartrate.) No animal contracted syphilis, in spite of the very considerable duration of the experiment (195 days). On the other hand, inoculation into normal rabbits of the popliteal lymph glands showed their complete sterility, which, taken in conjunction with the fact that the Meinicke turbidity reaction was negative, demonstrated the absence of any dormant infection and the real prophylactic action exerted by bismuth in this series of experiments.

Second series. (Metallic bismuth.) The animals were resistant to the first inoculation carried out on the fifth day after the first injection, but seven of the nine animals (77 per cent.) developed syphilis after reinfection 73 days subsequent to the injection. Further, the popliteal lymph glands of one of these animals which had not developed any scrotal lesion after the first spirochætal infection were found to be virulent.

It follows that bismuth administered in the form of an insoluble compound (basic tartrate) exerts a prophylactic action which is still effective 152 days after the injection, while metallic bismuth, in a similar dose, produces a prophylactic condition which disappears toward the end of the seventy-third day. The superiority of the insoluble compounds over metallic bismuth is, therefore, incontestable.*

In order to determine the mechanism of this protective action, we have compared the efficacy and duration of the protection with the bismuth content of the various organs, and in particular with that of the kidney. (Tissue metallic potential.)

The recorded figures show (1) that the absolute and prolonged protection afforded by basic bismuth tartrate corresponds to a high tissue content of bismuth, apparent at the beginning, and persisting to the end

* Further experiments have shown that bismuth in a soluble form (solubilised bismuth quinine iodide) affords, when injected, a prophylactic effect much inferior to that of metallic bismuth; the duration of the protection does not extend for more than 30 days.

of the experiment; (2) that in animals which have received metallic bismuth (the initial prophylactic action of which is completely exhausted by the seventy-third day) this bismuth content is always lower.

In other words, the kidney tissue metallic potential of rabbits injected with basic bismuth tartrate is shown to be decidedly superior to that of animals which have received metallic bismuth.

We conclude from these experiments that the preventive action of bismuth in experimental syphilis of the rabbit is, dose for dose, more complete and lasting when administered in the form of an insoluble derivative, such as the basic tartrate, than as metallic bismuth. This is due to the fact that the conversion into a bismuth protein complex, and consequently the absorption of the bismuth, is more complete in the first case than in the second; this is shown by the fact that the renal metallic potential is higher in the first case at whatever time its value is determined. The insoluble bismuth compounds appear more readily to undergo in situ the changes requisite for their assimilation, whereas bismuth itself, which is partly fixed and isolated by a process of encystment, appears to be absorbed more and more slowly the longer the time after the injection. Like those of L. Fournier and A. Schwartz, these experiments show that bismuth administered in the form of one or other of its insoluble compounds is capable of conferring effective and lasting protection, provided, however, that the quantities injected are sufficient and that the tissue metallic potential reaches a level below which no therapeutic or prophylactic action is possible. Further examination of syphilitic grafts inoculated into animals thus protected shows that up to the twelfth day these grafts are completely non-virulent and free from spirochætes.

Other experiments have established that bismuth acts not only on the spirochætes present in syphilitic lesions, but even on the virus which is present in the popliteal lymph glands of rabbits with syphilitic scrotal lesions. It is well known [8 9 10] that these glands are almost constantly virulent. To determine whether they remain so after the administration of sufficient doses of an effective antisyphilitic, we carried out nine experiments[11] in collaboration with MM. S. Nicolau and V. Sanchis-Bayarri.

Rabbits with extensive scrotal chancres were treated either with the basic tartrate of bismuth (0·1 g. per kg. in 5 cases) or with a soluble form of the basic bismuth salt of stovarsol (0·2 g. per kg. in 2 cases), and as a control with novarsenobenzol (0·05 g. per kg. in 2 cases). The popliteal lymph glands were dissected out at various intervals afterwards, and grafted into the scrota of normal rabbits. Of 24 inoculations of the glands and several grafts of the chancre, 2 only gave positive results, in 1 case with a chancre excised 5 days after the injection of the bismuth compound and in the other with a gland examined 18 days after the commencement of treatment. It is interesting to note that bistovol, even when administered orally, sterilised the glands.[12] We concluded that in the very great majority of cases the popliteal glands of animals with syphilitic chancres, which have received effective treatment with a bismuth or bismuth-arsenic compound, are deprived of their virulence.

It follows that bismuth, either alone or in combination with arsenic, acts not only on the spirochætes and the observable specific lesions, but also on the virus seated in the deep tissues, particularly in the lymphatic glands. Its curative action is consequently far-reaching, since to all appearances it brings about in the rabbit a complete sterilisation of the organism.

Absorption and Elimination.

On this question, which has been studied by different experimental methods by many authorities,[13 14 15 16] we entirely agree with Dr. Anwyl-Davies. The conditions of absorption and the toxic effects on the kidney show that the insoluble salts of bismuth are better tolerated than the soluble derivatives—e.g., sodium potassium bismuth tartrate. This was established by the earliest researches of Levaditi and Sazerac. The experiments of C. S. Leonard and O'Brien,[17] to which Anwyl-Davies refers, find their true interpretation in the protective action of insoluble compounds of bismuth and of the metal itself. If the organism tolerates greater quantities of bismuth in the form of metal it is because the absorption of the metal is incomplete. Local reaction indicating a histochemical process resulting in the production of active bismuth protein complexes (cf. bismoxyl), is slower and less complete with bismuth metal than with insoluble bismuth derivatives (basic bismuth tartrate or bismuth oxide or hydroxide). A process of encystment isolates the metallic bismuth, and results in a definitely lower tissue metallic potential and a prophylactic action which is irregular, incomplete, and transient.

Therapeutic Results.

The therapeutic results of every new antisyphilitic remedy must be considered from the following points of view: (1) the action on the spirochætes; (2) the influence on the specific lesions at any stage of the disease; (3) the influence on the serological reactions —e.g., Wassermann, Bauer Hecht, or Meinicke and Vernes' turbidity reaction. Dr. Anwyl-Davies examines the effect of bismuth therapy on these different factors, and compares them with those obtained with the arsenobenzols or with mercury.

(1) So far as the action on the spirochætes is concerned, Dr. Anwyl-Davies confirms all that we had already established by our earliest experiments, which have since been verified by all those who have studied this question of bismuth therapy in a sufficient number of cases.[18] Bismuth frequently brings about the disappearance of the spirochætes after the first injection, occasionally only after the second injection. Very rarely a third injection may be required. Naturally the time depends very much upon the patient, the dose, and the nature of the preparation. Dr. Anwyl-Davies lays stress upon the fact that the spirochæticidal action of bismuth is slower than that of the arsenobenzols; this is true for insoluble but not for soluble bismuth preparations. We have found that the rational employment of a soluble preparation of the double iodide of bismuth and quinine (solubyl) causes the spirochætes to disappear as rapidly as does novarsenobenzol injected intravenously. With the insoluble derivative the slight delay in the spirochætolysis is due to the tissue reaction necessary for the formation of the active bismuth-protein complex (bismoxyl). This slight delay can, however, scarcely be considered a serious drawback to the therapeutic efficiency of bismuth. This criticism would only carry weight if one were considering exclusively the prophylactic action of bismuth in relation to that of arsenic. A delay of 24–28 hours could not possibly permit the syphilis to progress so far that bismuth treatment should be given up. What is equally, if not more, important is the appearance of relapses in spite of treatment. These relapses, in the opinion of all observers, are much more frequent with the arsenical compounds than with bismuth if the latter is suitably administered. In our opinion, the relative slowness of the spirochætolysis by bismuth is largely offset by the far-reaching and lasting effect of the drug and by the rarity of relapses.

Since 1921, when, in collaboration with Sazerac,[6] we introduced bismuth into the treatment of syphilis, one of us has almost completely abandoned the use of the arsenobenzols and used bismuth only, even for vigorous treatment. Generally speaking, soluble derivatives are first employed to hasten the destruction of the spirochætes; insoluble preparations are given at the same time to ensure a thorough and lasting action. In certain cases arsenic is used as an adjuvant in forms that can be administered orally, such as stovarsol. We have never had any fault to find with this mode of treatment. If in the course of our vast experience, including at least 4000 cases of syphilis in all stages, we had perceived the slightest inferiority in our method to that employed in other hospitals, either in France or abroad, we should not have hesitated to abandon or to modify it.

(2) We have found bismuth equally effective in curing the specific lesions. On this point we are at any rate partly in agreement with Dr. Anwyl-Davies, since he himself acknowledges the rapid effect of bismuth on the mucous manifestations of secondary syphilis and on the tertiary lesions. This agreement, however, ceases when he makes a distinction between specific lesions which are amenable to bismuth treatment and those which are not. Syphilis in all its forms is amenable to cure by bismuth, from the outset (vigorous treatment) to the tertiary and late nervous stages. This is not to say that treatment by arsenicals should be abandoned, for splendid results are obtained by the simultaneous exhibition of bismuth and arsenic. Our observations show, however, that perfectly satisfactory results can be obtained without the intravenous injection of any of the arsenobenzols.

(3) As we have said many times during the last few years, bismuth acts on the Wassermann and similar reactions quite as well as, and sometimes better than, arsenic. We have put on record numerous examples of positive reactions irreducible by arsenic (relapses after treatment by the arsenobenzols) which have yielded to treatment with bismuth.

Dr. Anwyl-Davies gives figures from St. Thomas's Hospital which seem at first sight to prove that mercury has a better effect than bismuth on the serological reactions. The series he deals with was a mixed one, consisting of primary cases, some with positive and some with negative reactions, and of secondary cases with a roseolar or papular rash. 240 patients were given 5 g. "914" and 8 g. mercury; 185 patients were given 5 g. "914" and an average of 3·6 g. bismuth. The results on the Wassermann reaction were: 81·7 per cent. negative in the first group, and 77·3 per cent. in the second. Dr. Anwyl-Davies holds that this is a point in favour of the superiority of mercury. Needless to say, we cannot agree with him. The 4·4-per cent. difference between the two results is within the margin of individual variation. Syphilitic infection varies even more in the human subject than it does in animals. Moreover, the comparison between mercury and bismuth is vitiated by their employment in conjunction with arsenic.

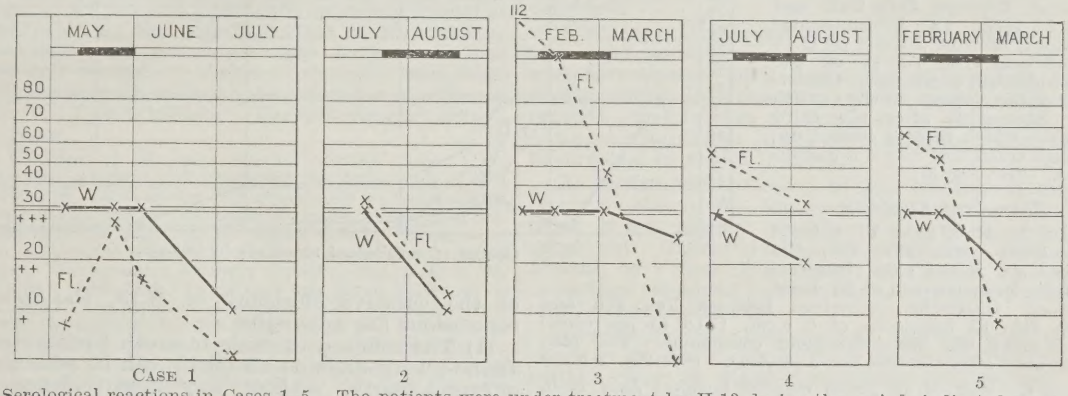
Bismuth-Arsenic Preparations: Bi-Stovarsol.

Bistovol (basic bismuth stovarsol) is a 10 per cent. suspension in oil of 41 per cent. bismuth and 15 per cent. arsenic. It was prepared and studied experimentally by Levaditi in 1924,[19] and tried on the human subject by Fournier and Schwartz.[20] Fournier used it for the treatment of 20 syphilitic patients with chancres or secondary symptoms, and records the following results:—

The spirochætes disappeared (chancre ten cases, mucous patches or erosive lesions eight cases) in from 24 to 48 hours after the first injection. In two cases only was a second injection required. The primary or secondary lesions cicatrised rapidly as with the best bismuth preparations, and adenitis, rash, papular eruptions, and general symptoms disappeared with equal celerity. The marked diminution or complete disappearance of the complement-fixation reaction showed the thoroughness of the therapeutic effect.

These experiments were all carried out with the basic bismuth stovarsol prepared from sodium potassium bismuth tartrate, and the sodium salt of p-hydroxy-acetyl-amino-phenyl-arsinic acid. Since then the preparation has been manufactured, particularly in England, under the name of bistovol. Dr. Anwyl-Davies reports that he used bistovol at St. Thomas's Hospital, but was unable to confirm our clinical results. He says that the injections were very painful, and that motile spirochætes were found six or even seven days after the first dose. "When it was found," he says, "that *S. pallida* were present seven days after a single dose of 0·3 g., and the negative Wassermann reaction had become strongly positive (++) during the same time, stronger doses were injected at shorter intervals. In two cases 0·6 g. was injected in three days, but the spirochætes were found alive five days after the initial dose, and the Wassermann reaction was positive (++). In two other cases 0·75 and 0·9 were given, but the spirochætes were active on the fourth and fifth days respectively."

FIG. 3.



Serological reactions in Cases 1–5. The patients were under treatment by H.13 during the periods indicated by the thick black lines at the top of the chart. W = Wassermann reaction. Fl = Flocculation.

We cannot explain the difference between our results and those of Dr. Anwyl-Davies. In most of our patients the spirochætes disappeared within 24 or 48 hours after the first injection, and many other workers agree with us that the bistovol exerts a definite effect, both on the clinical symptoms and on the serological findings, as soon as the first series of injections is completed.

Since our early experiments were published it has been found possible to produce a perfectly clear and stable solution of bistovol† for use in strengths equivalent to 2 or 10 per cent. of bistovol. This solution is known as H.13. One of us[21] has studied the action of this product on syphilitic rabbits with chancres experimentally produced by the inoculation of Truffi's virus, or with preputial lesions due to *S. cuniculi* (rabbit spirochætosis). Its therapeutic efficacy is remarkable. Injected intramuscularly, H.13 shows a chemotherapeutic index of 1:35. It acts not only on the spirochætes of the external lesions, but also on the syphilitic virus in the popliteal glands. Lesions cicatrise in a few days, although the dose of bismuth is not more than 0·00082 g., and that of arsenic 0·0003 g. per kg.

Therapeutic trials on man have been carried out in the Hopital Cochin.

Primary Syphilis.

CASE 1.—A man 22 years of age entered hospital on May 9th, 1927. Chancre of prepuce. Bilateral inguinal

† The authors are indebted to Messrs. May and Baker, Ltd., London, for supplies of the various bismuth-arsenical preparations employed in the course of this investigation.

adenitis. Spirochætes present; Bauer Hecht and Wassermann reactions strongly positive; flocculation, 6. Received, intramuscularly, from May 10th to June 1st, 10 injections of 2 c.cm. H.13 (10 per cent.), being in all 2 g. of bistovol. Spirochætes disappeared the day after the first injection, cicatrisation of the chancre commenced on the third day, and cure was rapid. On July 8th persistence of the polyglandular inguinal adenitis was noted. The changes in the serological reactions are shown in Fig. 3.

CASE 2.—Man, aged 25 years, entered hospital July 19th, 1927. Indurated chancre of the prepuce dating from 15 days previously. Bilateral inguinal adenitis. Bauer Hecht and Wassermann reactions markedly positive. Calmette-Massol reaction positive. Flocculation, 38. It was impossible to demonstrate spirochætes in the chancre fluid. Received, between July 20th and August 18th, 12 intramuscular injections, each of 5 c.cm. of H.13 (2 per cent.) or 1·2 g. of the arseno-bismuth compound. Cicatrisation of the chancre on the twelfth day. Stomatitis after the third injection, which rapidly cleared up, although treatment was not discontinued. (See Fig. 3.)

Secondary Syphilis.

CASE 3.—Boy, aged 17, entered hospital Feb. 15th, 1927. Preputial chancre six weeks old. Bilateral adenitis. Roseolar rash of 10 days' duration. Headache. Received between Feb. 8th and March 4th, 12 injections of 5 c.cm. H.13 (2 per cent.) or 1·2 g. of the bismuth-arsenic compound. The rash disappeared after the first few injections. (See Fig. 3.)

CASE 4.—Man of 36 years, entered hospital July 12th, 1927. Mucous plaques on the prepuce, anus, and scrotum. Syphilitic chancre a year ago. Spirochætes present. All the serological reactions strongly positive. Flocculation, 58. Received, between July 8th and August 5th, 12 injections of 3 c.cm. H.13 (2 per cent.) or 0·72 g. of the bismuth-arsenic compound in all. The spirochætes disappeared the third day after the first injection. The lesions were rapidly cicatrised. Mild stomatitis July 25th. (See Fig. 3.)

CASE 5.—Man, aged 21 years, entered hospital Feb. 3rd, 1927. Slight chancre in November, 1926; cicatrised in 8–10 days. In January laryngitis, alopecia, roseolar rash; on entry mucous plaques and bilateral inguinal adenitis. All the serum reactions strongly positive. Flocculation, 64. Received from Feb. 7th to March 7th, 12 injections of 5 c.cm. H.13 (2 per cent.) = 1·2 g. of the compound. The lesions cicatrised in a few days. (See Fig. 3.)

CASE 6.—Man, aged 30 years, entered hospital Sept. 29th, 1926. Cicatrised chancre of the prepuce. Bilateral inguinal buboes. Roseolar eruption. Headache; periostitis. All serum reactions strongly positive. Flocculation, 95. Received, from Sept. 29th to Oct. 25th, a first series of 12 injections of H.13 (10 per cent.); then from Nov. 20th–26th, six further injections = altogether 5·4 g. of the compound. After the fourth injection the rash became paler and disappeared; the patch of periostitis progressively decreased. The serological reactions became negative in January.

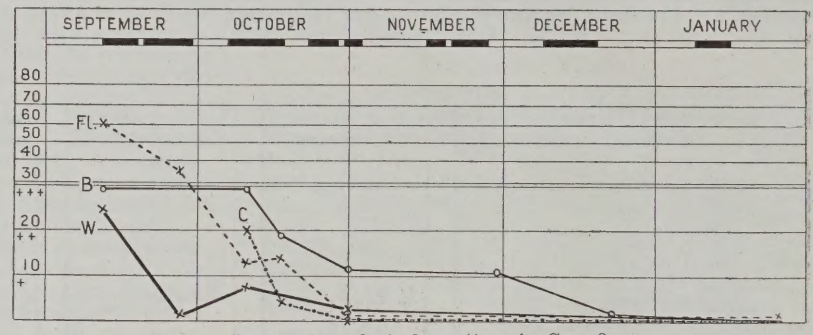
In some cases we have combined the treatment by injections of H.13 with a course of stovarsol, and of the bismuth salt of stovarsol per os. The following case affords an example:—

CASE 7.—Man, aged 29 years. Entered hospital Jan. 28th, 1927. Chancre of the frenum had commenced five months previously. Inguinal adenitis, all the serological reactions strongly positive. Flocculation, 33. Received, July 29th and 31st, 4 c.cm. H.13 (2 per cent.), then from Feb. 2nd to 28th, 5 c.cm. of the same product daily. From March 27th to April 6th, eight tablets of bistovol (0·25 g. per tablet) per day.

Although these patients have not been followed up long enough to enable us to make a definite estimate of the curative efficiency of H.13, the following conclusions are admissible:—

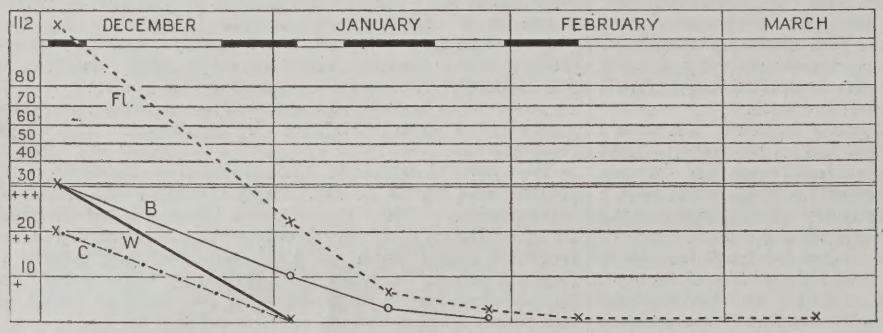
(1) The solution of basic bismuth hydroxy-acetyl-amino-phenyl-arsinic acid (H.13) can be administered intramuscularly, without any inconvenience other than a certain amount of pain (which varies with the patient and the dose injected) after the injection, and a negligible stomatitis. (2) That H.13 has curative properties is shown not only by its very rapid effect on the spirochætes and on the specific primary and secondary lesions, but still more by its effect on the serological reactions, which have been rendered negative or nearly so by the administration of an amount equivalent to 0·72 g. to 2 g. over a single series of 12 injections.

FIG. 4.



Course of serological reactions in Case 8.

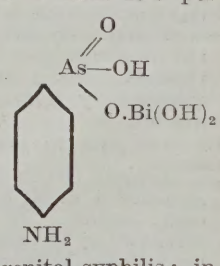
FIG. 5.



Course of serological reactions in Case 9.

Bismuth Arsanilate and Bismuth Tryparsamide.

Other bismuth derivatives of similar arsenical compounds are bismuth arsanilate and bismuth tryparsamide.‡ Bismuth arsanilate was first prepared by J. O. Shircore, Director of Medical and Sanitary Services, Tanganyika. It has the formula here shown, and contains 45·5 per cent. of bismuth and 16·3 per cent. of arsenic. Shircore reported in a letter to THE LANCET [21] the observations of J. G. McNaughten concerning 1158 cases of yaws and 538 cases of syphilis treated with this preparation. The severest lesions of yaws were cured in a few days, so that it was unnecessary to give more than two injections. The author had only treated cases of tertiary and congenital syphilis; in 75 per cent. six injections were sufficient to bring about a complete healing of the lesions. Only 10 of the 1696 cases treated showed any signs of stomatitis. Shircore concludes that bismuth alone



‡ This product is at present the subject of investigation, the results of which will be reported later.

is quite effective in syphilis, but that the bismuth-arsenic compound is much better; the mild character and low percentage incidence of the stomatitis are distinct advantages in its favour.

We have also experimented with bismuth arsanilate, both in animals and in man.[12] In intramuscular doses of 0·1 to 0·05 g. per kg. it brings about the rapid destruction of spirochætes and prompt cicatrisation of lesions. Our impression is that it is suitable for intramuscular injection, which is quite painless and perfectly well tolerated, and that it compares with the best preparations of insoluble bismuth derivatives.

Oral Administration of Bismuth-stovarsol.

Analyses undertaken in collaboration with Mlle. Y. Manin, according to the very sensitive method described by Girard and Fourneau, have demonstrated the absorption by the digestive tract of both arsenic and bismuth, and about a dozen patients in the primary and secondary stages of syphilis have been treated entirely with bismuth-stovarsol per os, either in solution (H.13) or in tablets. The following are details of the cases.

CASE 8.—Man of 59 years entered hospital Sept. 11th, 1926, showing a bright red triangular preputial rash of two fingers-breadth, surrounding the glans with an œdematous pad. Syphilitic rash on the arms and chest three days old. Commencement of infection five weeks before. Absence of adenitis. Spirochætes present in the surface of the preputial ulceration; Wassermann strongly positive; flocculation, 54.

From Sept. 11th–18th the patient was given daily per os 20 c.cm. H.13 (2 g. bismuth-stovarsol). On the second day, Sept. 13th, the spirochætes disappeared and the rash cleared up. On Sept. 16th the lesion had assumed the appearance of muscle tissue; it had diminished in width, and the edges showed signs of cicatrisation. From Sept. 19th–25th, a second series of doses of H.13 (20 c.cm. daily). On Sept. 23rd, 12 days after commencement of treatment, the lesion had diminished by one-half and cicatrisation progressed from day to day. On Sept. 27th the serological reactions were as follows: Bauer Hecht positive, Wassermann weakly positive; flocculation, 38 (in place of 54). 20 c.cm. were given daily from Oct. 6th–27th; 25 c.cm. daily from Oct. 22nd–28th; 10 c.cm. daily from Nov. 15th–19th; 10 c.cm. daily from Nov. 20th–27th; 20 c.cm. daily from Dec. 8th–19th. From Jan. 8th–15th two tablets of 0·5 g. daily. The patient, therefore, received altogether, in the space of 126 days, 119 g. of the bismuth-arsenic derivative without any untoward effects. The course of the serological reactions is shown in Fig. 4.

CASE 9.—Woman, aged 25 years. Entered hospital Dec. 2nd, 1926. Syphilitic rash. Reactions: Bauer Hecht, Wassermann, and Calmette–Massol, all strongly positive; flocculation, 112. Received one injection of H.13 (3 c.cm. 10 per cent.) which was badly tolerated, followed from Dec. 2nd–6th by a daily dose of 5 and 10 c.cm. H.13 by mouth. The subsequent treatment was as follows:—

Course.

2nd ..	Dec. 10th–22nd	}	15 c.cm. H.13 daily.
3rd ..	,, 25th–Jan. 3rd		
4th ..	Jan. 10th–21st	}	0·75 g. (3 tablets 0·25 g.) daily.
5th ..	,, 31st–Feb. 9th		

The patient therefore received, over a period of 50 days, 51 g. of bismuth-stovarsol by mouth. The serological reactions are shown in Fig. 5.

CASE 10.—Woman of 30 years. Came into hospital Jan. 7th, 1927. Infected mucous plaques and vegetative ulceration on the thighs and labia majora dating from a month previously. Rash. Serological reactions strongly positive. Flocculation, 70. The treatment was as follows:—

Course.

1st ..	Jan. 7th–19th	}	12 doses (in tablets) of 0·75 g.
2nd ..	,, 24th–Feb. 4th		
3rd ..	Feb. 10th–28th		

On Jan. 19th, 12 days after commencing treatment, the rash had completely disappeared and cicatrisation of the mucous plaques had commenced. The patient, who was completely cured, received in a period of 52 days 26 g. of bismuth-stovarsol.

CASE 11.—Boy, aged 15 years. Entered hospital Feb. 14th, 1927. Phimosis and subpreputial induration commenced six weeks before. Inguinal adenitis; Wassermann negative. Feb. 21st, Wassermann weakly positive. March 2nd, all serological reactions strongly positive. Flocculation, 22. The treatment was as follows:—

Course.

1st ..	March 4th–14th	}	2 g. of the compound daily.
2nd ..	,, 20th–28th		
3rd ..	April 11th–21st		
4th ..	May 11th–18th		

On March 17th, phimosis disappeared, chancre cicatrised (13 days after commencement of treatment). The patient received in the course of 75 days 78 g. of bismuth-stovarsol.

Conclusions.

Our clinical experience as a whole, and these observations in particular, lead us to the following conclusions:—

(1) Bismuth-stovarsol administered by mouth, whether in solution or in the solid form, is perfectly well tolerated in doses of 2 g. daily for a period of 8–11 days. Even with this very considerable dosage, corresponding to 0·82 g. of Bi. and 0·3 g. As. per day, we have never observed any digestive or other disturbance worthy of note, with the exception of two cases, in which a generalised erythema appeared but quickly subsided.

(2) Cases of primary and secondary syphilis, in which the serological reactions were strongly positive and spirochætes were demonstrably present, have shown rapid disappearance of the spirochætes and prompt cicatrisation of the lesions. The rash has disappeared in from 10–12 days, and the lesions have been cured in about 13 days.

(3) Under the influence of the treatment, exclusively by the mouth, the serological reactions become more or less rapidly negative whatever the reaction employed (Bauer-Hecht, Wassermann, Calmette-Massol, or Vernes' flocculation reaction). In certain cases they remained negative for a long period without any further treatment.

Admittedly our cases are few, and the time is too short to permit us to judge definitely of the therapeutic value of bismuth-stovarsol administered by mouth. Nevertbeless, it is not going too far to suggest, from the actual clinical records, the usefulness of this method of treatment in all syphilitic cases where treatment by injection is contra-indicated, or where it is necessary to employ a method of treatment which is convenient and well tolerated by the patient.

We purposely leave out any comparison of the therapeutic value of bismuth as against mercury. Dr. Anwyl-Davies is the only author, among the numerous workers who have considered the question, to cast any doubt on the superiority of bismuth over mercury. We will leave it to him to support his opinion by clinical and experimental evidence. In the meanwhile we hold to our own view—viz., that mercury by reason of its toxicity, the severity of the mucous and renal lesions which it provokes, the mediocrity of its therapeutic value, and the difficulties and uncertainty attaching to its employment, is definitely of less value than bismuth.

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TRANSCONDYLAR FRACTURES OF THE HUMERUS IN CHILDREN.

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FRACTURES of the lower end of the humerus in children may be grouped under three headings as follows:—

(1) *Supracondylar* fractures in which the line of fracture is through the lower end of the shaft of the humerus, above the fossæ and the attachment of the capsule of the elbow-joint, unless of the T-shaped variety.

(2) *Transcondylar* fractures, in which the line of fracture is accurately at the level of the condyles or immediately above or below them, traverses the fossæ, and is in part, at any rate, within the capsule of the joint. This fracture has frequently been described under Group I. or as a fracture-separation of the lower humeral epiphysis.

(3) *Condylar* fractures, in which a small fragment including the condyle is separated from the inner or outer aspect of the bone, the line of fracture being oblique or vertical in direction and involving as a rule the epiphysial line.

Although the general principles governing the treatment of the three groups are essentially the same, it is the transcondylar fracture to which reference is now made, since besides being very common, is of importance as it may present special difficulties in both the immediate and the after-treatment.

Characteristics of the Fracture.

The line of fracture is usually somewhat crescentic with the concavity upwards, and passes transversely between the condyles through or near the centre of the olecranon fossa, while the fractured surfaces are slightly oblique. There is therefore a long upper fragment of diaphysis and a very short lower one consisting of a small fragment of diaphysis and the epiphysis, which are usually of about equal depth; it is rare for the epiphysial line itself to be involved. The fracture may be incomplete or complete without displacement, but if it is complete displacement is generally marked and typical. The long upper fragment is thrust forwards and in the severe case may come to lie under the skin on the anterior aspect of the elbow or may penetrate it. The small lower fragment consisting of the fragment of diaphysis and the epiphysis is tilted forwards and together with the whole forearm is carried backwards, limited to some extent by the triceps tendon. The main displacement is of the long upper fragment which as just stated is usually displaced forwards, occasionally laterally and rarely backwards. The capsule of the elbow-joint is torn and the periosteum on the posterior aspect of the humerus is extensively stripped up, and from these, as well as from the network of vessels surrounding the lower end of the bone, there is usually considerable effusion of blood round the site of fracture. This effusion, together with the displacement of the bone fragments, creates a tension which may interfere with the circulation in the main vessels of the limb. In one case in my own experience the hand became gangrenous as the result of tension from the injury alone; in another case the same thing happened as a result of the arm being fixed with the elbow flexed in the presence of much tension; while on several occasions the circulation of the hand has been interfered with temporarily as an immediate result of the injury.

The deformity of the elbow is, as a rule, obvious, the contour of the region being entirely altered while all bony landmarks are obliterated by the swelling. Manipulation of the elbow or arm for the purpose of diagnosis is to be avoided, since apart from causing much pain and perhaps further damage, an accurate diagnosis of any injury in this region is impossible without X rays. Radiograms in two planes should be taken as soon as possible, and though under certain conditions this may cause delay, apart from temporary immobilisation it is unwise to attempt treatment until these have been obtained, and it is, too, a great help to have control radiograms of the sound elbow for comparison.

Treatment.

If when the case is first seen there are any signs of interference with the circulation as shown by a difference in colour or temperature of the fingers or hand, or any alteration in the volume of the pulses, or if the effusion round the elbow is so severe as to suggest that such interference might occur, any manipulation of the arm is, in my opinion, contra-indicated. It may be argued that restoration of alignment of the bone fragments will help to lessen the tension and this is probably so; but it is in such cases that the reduction is difficult owing to the effusion and tension, and manipulation may have to be prolonged and perhaps forceful so that definite risks are run of damaging further an already embarrassed circulation.

When the case is first seen, therefore, every care should be taken to discover any sign of interference with the circulation, and the same care should be exercised afterwards when the splint or bandage, as the case may be, has been applied. Apart from a certain degree of aching, a fractured limb after reduction and immobilisation should be comfortable; pain may be taken as an indication of pressure either from incomplete reduction or faulty splinting, and should always demand attention.

In cases, therefore, with severe effusion and signs of interference with the circulation, the arm should be supported temporarily on a wide internal angular splint with the hand and forearm covered while the gentlest stroking movements are applied to the elbow region to assist the absorption of effused products. As a rule a gradual improvement will take place in the course of two or three hours, but if at the end of this time there is no improvement or the contrary, the condition is to be regarded as an emergency, demanding operative measures to evacuate the effused blood and to restore alignment of the fragments. On the other hand, if the circulation returns to normal, and as a rule it does, it is unwise to carry out any manipulation for at least 24 hours. By this time the presence of much blood-clot will prejudice or perhaps prevent reduction, and if reduction cannot be obtained, provided the condition of the skin is satisfactory, an open operation should be performed without undue delay. In cases therefore with effusion of blood of marked severity operative measures, either immediate or when suitable, provide, in my opinion, the safest means of avoiding danger and dealing with the deformity.

In the ordinary case with displacement an attempt at reduction must be made immediately under full anæsthesia. The upper arm of the patient is held firmly while the wrist is grasped and steady traction applied with the forearm extended as far as is possible; still maintaining traction, the forearm is slowly flexed. The whole movement should be firm and slow as any degree of force is liable to cause damage. Where there is lateral displacement the same movements are carried out and direct pressure applied over the lower end of the upper fragment. My impression is that reduction is usually possible in the early stages; in the others it fails chiefly owing to the presence of blood-clot. A delay of a few days to allow absorption of the effusion before attempting reduction defeats its own object, for the blood when organised causes a still more solid resistance, while in these cases callus is formed with considerable rapidity. If, therefore, a genuine attempt at non-operative reduction has failed, a second trial is unlikely to be any more successful and an open operation should be advised, since an uncorrected displacement results in permanent deformity and diminished function.

The best approach to these fractures is by a midline incision on the posterior aspect of the arm. The skin, subcutaneous tissue, aponeurosis, and muscle of the triceps is divided and the blood-clot cleared from the site of injury. The site of fracture even after a few days may be completely obscured by a thin layer of callus, which requires removal. The forearm is extended as far as possible and a light lever is inserted

between the two fragments, and while the forearm is slowly flexed the long upper fragment is levered backwards. Several attempts may be necessary to obtain satisfactory reduction and care must be taken to avoid injury to the small lower fragment. When reduction has been obtained, no fixative metal or otherwise should be introduced. This small operation which in principle is simple, sometimes presents much difficulty in accomplishment.

Whether reduction has been obtained by operative or non-operative means, there is a tendency for the displacement to recur, and the best means of avoiding this is by a position of flexion at the elbow which creates traction on the lower humeral fragment and holds it together with the forearm in a forward position, and, with due care that there is no interference with the blood-supply, flexion is the position of choice for maintaining reduction. A common impression exists that flexion per se helps reduction, and on account of this there is rather an undue anxiety to obtain this position as soon as possible in all fractures in the elbow region. Flexion does not assist reduction, but is a useful means of creating traction on a small fragment at the lower end of the humerus, and helped by the action of the triceps tendon of maintaining a position obtained by manipulation; it should be used only if indicated as there is a certain element of danger especially in the presence of effusion, and it is unnecessary in fractures with no displacement, which need only be temporarily immobilised on any convenient splint. In any case flexion is unnecessary after two or three days or a week at the outside, when the arm should be released to a right angle supported by a sling only and voluntary movements of the elbow encouraged. There is no fear of slipping of the fragments after three to four days provided accurate alignment has been restored and *voluntary movements* only are employed, and this remark applies to many transverse fractures of the limb bones, if reduction with impaction has been obtained.

Formation of Callus.

In the natural course of repair callus, and owing to the vascularity of the part much callus, is quickly thrown out, and is increased in direct proportion to the degree of displacement left uncorrected. In any case, however, callus situated around and within the capsule of the joint and filling the grooves and fossæ at the lower end of the humerus mechanically obstructs movements both of flexion and extension at the elbow, and it is not until this has been partially absorbed, partially remodelled, and the capsule has been repaired and freed that full movement can be expected. This applies to any of the fractures in the region of the elbow-joint, and should be pointed out to parents in the beginning and insisted on as a natural course of repair, otherwise if at the end of many weeks movements are still limited anxiety is naturally expressed. One of the main objects of treatment, then, is to avoid excess of callus, and it can be limited to some extent at any rate by an accurate restoration of alignment and the employment afterwards of voluntary movements under supervision only. Malposition necessarily entails a greater output of callus and unequal repair of the capsule, and violence in the shape of passive movements, vigorous massage, or manipulation under an anæsthetic causes considerable irritation and effusion, and should be entirely avoided. Limitation of movements is not due to obstruction in the elbow-joint itself provided voluntary movements have been commenced early and are continued, but is mainly the result of an actual mechanical block by callus which may continue for weeks or months, but eventually disappears in most cases. There is the occasional case in which a mass of callus remains unabsorbed; in my experience this rarely happens in children, even in the presence of an uncorrected displacement; but in corresponding fractures in the adult it does sometimes occur in spite of a satisfactory alignment, while the difficult complication of ossification in the surrounding muscles is also occasionally met with.

Apart, then, from the employment and encouragement of voluntary movements under supervision from the third or fourth day onwards but little after-treatment is required. If there is much effusion in the early stages, effleurage should be employed; otherwise massage, as already mentioned, is rather to be avoided as a possible source of irritation which will cause further callus-formation.

CHRONIC GLAUCOMA.

THE IMPORTANCE OF EARLY DIAGNOSIS.

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ONE of the greatest and most terrible afflictions of middle or advancing years is the knowledge of impending and irrevocable blindness, and amongst the causes which lead to such blindness chronic or simple glaucoma is one of the commonest. As is well known, acute glaucoma stands in quite a different category from the chronic type, but nevertheless it is as frequently allowed to pass into blindness. The former may, and often is, mistaken for acute iritis, but the latter is often never recognised. I am convinced that if chronic glaucoma is taken in hand in an early stage there is every probability that vision can be permanently saved. It is one of the most insidious of diseases, and usually there are no well-defined symptoms or signs which can lead to its early detection by the general practitioner. Hence the danger; for the patients, either through want of observation or owing to an inherent gift of hope, do not complain of failing eyesight until quite late in the course of the disease.

Points in Diagnosis.

Chronic glaucoma occurs in both sexes almost equally. In 155 consecutive cases of the disease seen in private practice 79 were males and 76 females, and their ages ranged from 50–86, nine cases being below the age of 50 and the youngest being 26 years old. In a large percentage of cases the health is not good. The patient may have passed through some debilitating illness or some nervous strain. Indeed, the depressing effects of financial worries, the attempt to make ends meet, is as common a background as any, though prolonged and close attention on a sick relative, especially when ending in bereavement, is a very potent predisposing cause. In all such cases it behoves the practitioner to keep the idea of chronic glaucoma ever before his mind. The patient's eyes tire very easily after reading, and, thinking that it is only a question of procuring stronger reading-glasses, he goes to an optician and finds that he gets on much better with the new lenses. In a few months, however, or it may be only weeks, he again finds increasing difficulty in reading, especially at night. That I regard as a very dangerous and characteristic symptom in a person past middle age. Other patients state that the sight becomes misty and objects hazy. Sometimes, particularly during the period of obscuration, rainbow-coloured rings may be observed, but this is seldom mentioned by a patient. These transient periods of dimness of vision are probably associated with some slight rise of tension in the eye. After a longer or shorter interval the patient begins to observe definite failure of vision; small print presents increasing difficulty, especially at night, and eye weariness sets in quickly when attempting to read. All this while changes of deep significance have been taking place quite unconsciously. The visual field undergoes a gradual and progressive diminution in size, and the contraction may be of various types.

On examination the eye may seem to be perfectly healthy, with pupils equal and actively responsive to light. On the other hand, the cornea may show slight haziness, the anterior chamber be shallow, and

the pupil semi-dilated and reacting very sluggishly to light. In the latter type of case the tension of the eye is nearly always raised, sometimes markedly, whereas in those eyes which look normal it may be difficult to detect any rise in tension at all, though with the modern methods of tonometry it may be possible to detect a smaller rise of tension than could be detected with the finger. In all cases which have advanced beyond the earlier stages the ophthalmoscope will reveal some pallor of the optic nerve, with definite excavation of the nerve head. In the initial stages the optic disc may be hyperæmic rather than pale. The visual fields always become contracted, and their contraction may take on different types, such as defects of sector shape and greater involvement of the nasal portion, and this may be associated with almost normal visual acuity. Indeed, visual acuity is only seriously impaired at a comparatively late stage of the disease. The blind spot becomes definitely enlarged, and other blind spots (scotomata) may appear. The changes in the visual field are of greater significance in the prognosis than any other single symptom.

The pathogenesis of chronic glaucoma is not settled, but probably it is at any rate partially true to say that the direct cause is an intermittent or constant slight increase of tension in the eye, due perhaps to defective elimination of the ocular fluid.

The progress is almost invariably a steadily downward course; the visual fields become definitely more and more contracted, while central vision follows a little behind. At last the remaining central area of the field is contracted out and vision becomes hopelessly and permanently lost.

Treatment.

I am fully persuaded that, once the diagnosis is made, the earlier that operation is performed the better will be the result. No operation can materially improve sight that has been impaired by partial atrophy, but a suitable operation can, and does, retain sight that is present, and retain it permanently. It therefore follows that the better the sight at the time of the operation the better the permanent result, and the worse the sight the poorer the result. Yet, however bad sight may have become, operation may retain some ability to get about alone, and even that amount of vision is a very precious asset to an active person. The old method of iridectomy cannot be depended upon, and in the great majority of cases that have come under my observation iridectomy has been utterly useless. The modern method consists in producing a filtering cicatrix—i.e., a leaking channel—between the anterior chamber and the subconjunctival space, and is the only reliable method at present available. Several ways of attaining this result have been brought forward; personally, I have favoured that known as trephining and introduced by Lt.-Col. R. H. Elliot, and I make bold to say that the great majority of cases of chronic glaucoma can be saved by this operation.

On looking through my records of private cases I find that of 100 operations for chronic glaucoma the patient's sight has been retained in 91. Sometimes there has been some slight failure of vision without any sign of rise of tension or other pathological causes, but none of them have lost sight while under observation, which sometimes extends up to ten years and none under four months. The failures were: suppuration 24 hours after operation (a subacute case which became suddenly acute), 1 case; septic irido-cyclitis (one year after), 1 case; intraocular hæmorrhage after operation, 2 cases; inefficient operation (trephine hole becoming blocked), 2 cases; chronic irido-cyclitis starting after operation, 1 case; cataract soon after operation, 1 case; and gradual loss of sight due to progressive atrophy of the nerve, 1 case. In a few cases cataract developed some years after trephining, and in two or three of these subsequent extraction led to a return of ability to read easily.

I have operated upon ten cases where vision varied from counting fingers down to hand movements. Such vision is compatible with ability to get about in familiar surroundings. The result of operation has been satisfactory in that there has been a retention of such vision for periods varying from three months to four years after operation. On the other hand, I have operated upon a case in which vision was 6/6 in each eye, but the fields were definitely and rapidly contracting; in that partucular case it was essential to retain a high degree of visual acuity in order that the man should be able to carry on his work. The operation on both eyes arrested the progress of the disease and for eight years he was able to do very fine work. Cataract then began to affect vision, which is at present 6/36 in each eye.

Summary.

In the modern operation of trephining we have a method which in about 90 per cent. of cases will ensure a permanent cure for glaucoma; while it cannot restore sight lost, it can prevent further deterioration, and therefore it is always wise to operate as early as possible. At the same time, in a few cases it may be justifiable and wiser to wait, trusting to general hygiene and the wise ordering of the patient's method of living, together with the use of eserine. The large majority will ultimately lose sight unless operation is undertaken. The future may, and possibly will, bring an advance in our knowledge of the pathogenesis of the disease, and other methods may become available, but to-day to place our confidence on any other method than operation is to risk the loss of sight which might have been saved.

A FURTHER CASE OF MULTIPLE PANCREATIC CALCULI.

REMOVAL AND RECOVERY.

BY E. C. LINDSAY, C.B.E., M.B. LOND., F.R.C.S. ENG.,

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IN 1922 I recorded in THE LANCET [1] the operative removal of six calculi from the main duct of the pancreas by a direct anterior incision, followed by drainage of the duct for a few days. The uneventful recovery and continued good health of the patient after five years encourages the belief that the primary source of these stones, presumably infection, had been reduced, if not eliminated, by drainage.

As Moynihan points out, the recorded cases are so few as to leave the symptomatology of pancreatic calculi at any rate indefinite. A further case of this rare condition, therefore, in which previous pancreatic symptoms had occurred, and in which the diagnosis of calculi was confirmed by X rays, and later operation, may not be without interest.

I was asked by Prof. A. W. M. Ellis to see a case under his care in which suspicion of pancreatic calculi had arisen.

History.

The patient, a messenger, aged 43, gave the following history. In 1922, while walking along the street, he had a sudden severe pain in the abdomen under the costal margin. The pain increased in severity, radiating to the left shoulder, causing sweating but no vomiting. The pain subsided gradually, leaving him tender in the left hypochrondrium for two months. Attacks then recurred in the same area with the same radiation of pain, but less severe than the first, and associated with a gradual deterioration of his general health.

In December, 1924, he was admitted to hospital for investigation, when a rounded tender mass was discovered under the left costal margin, extending 4 in. below the costal margin towards the umbilicus. A differential blood count showed 15,000 leucocytes. Ten days after admission sudden severe abdominal pain occurred with vomiting and the abdomen became rigid. Laparotomy was performed, and the abdomen was full of blood-stained fluid resulting from the rupture of a collection of fluid in the lesser sac. Drainage was established, and the patient was discharged a few weeks afterwards.

Three months later he was readmitted, as it was found he had developed a glycosuria with acetone bodies present in small amount. His blood-sugar was 0·154 per cent. His diet was adjusted and he went out sugar free on carbohydrates 60 g., protein 60 g., and fats 148 g.

Ten months later he was readmitted for abdominal pain about half an hour after food, beginning as an ache in the region between the gall-bladder and the umbilicus, culminating in paroxysms of severe pain, doubling him up and radiating to the left. The paroxysms were accompanied by nausea, but no vomiting had ever occurred. Wasting, weakness, and polyuria developed, and no real progress was made on insulin and diet.

The history of previous pancreatic trouble, the character of the pain, especially its similarity in locality and radiation to that previously described, and the evidence of pancreatic disturbance, both in urine and stools, led Prof. Ellis and myself to discuss the diagnosis of pancreatic calculi, to be confirmed by the admirable X ray photograph (see figure) taken by Dr. M. H. Jupe. In view of the evidence of continued and progressive destruction of the pancreas (the inevitable sequel to calculous obstruction as shown in the cases recorded by Atkinson and Hirsch [2]), operation was decided upon, although not without some misgivings, as the blood-sugar persisted at 0·2 per cent. Lazarus [3] records 36 cases of glycosuria in his series of 80; Lancereaux [4] 12 in his series of 40.

Skiagram showing pancreatic calculi.

Operation.

General anæsthesia was employed, and the abdomen opened by a paramedian incision. Many adhesions were encountered, and the lesser sac was found to be obliterated by the previous effusion and drainage. The whole pancreas was enlarged, and on palpating the head the same peculiar crunching sensation described with the previous case was felt. It can best be likened to grasping a bag of marbles. Link described it in his case as "feeling like a bag of sand." The head of the pancreas was enlarged and extended below the duodenum. It was not the usual pale pink colour, but yellowish, and of a tough fibrous consistency. The duodenum was gently cleared upwards, and an incision made into the lower part of the head running up towards the neck. Small particles of grit were encountered in the substance of the head (shown in the X rays), but the duct was not discovered till the incision was deepened and carried upwards, when a large stone was dislodged, followed by a copious flow of dark-coloured glairy fluid with sandy particles in it. A Desjardin's forceps was passed into the dilated duct, and after several stones had been withdrawn passed with ease along the entire duct and could be felt in the tail of the gland. No entry into the duodenum could be made after all the stones had been cleared from the duct.

Some little hæmorrhage resulted from these manœuvres, and, recalling the toleration of actual drainage which the previous case had demonstrated, I passed a small tube 5 in. into the duct, and secured it by a plain catgut suture. The opening in the head of the pancreas was sutured round it in layers with chromic gut, and the tube, with a sheath of omentum sewn round it, was carried out of the abdomen by a stab incision in the right side opposite the pancreatic opening. The gall-bladder was rapidly drained.

Progress.

The patient stood the operation well; the pulse-rate never rose above 88, and the highest temperature reached was 99·2° F. on the second day. The pancreatic tube drained 3 oz. in the first 24 hours, 10 oz. in the next 24 hours, 8 oz. in the next two days, the tube being removed on the fifth day. Pancreatic secretion, which had no effect on the skin, continued for three days. The gall-bladder tube was removed on the ninth day, and the patient got up on the fourteenth day.

The blood-sugar improved and ten days later was found to be 0·143 per cent. Pain disappeared, appetite improved, and the patient gradually put on weight, his blood-sugar being controlled by insulin. His stools, large and of a peculiar dull silvery colour, indicated the persistent deficiency of steapsin in his pancreatic juices. Lazarus [3] found steatorrhœa present in 10 of the 80 cases in his series. The patient has returned to his work, and although on an adjusted diet and insulin, remains free from pain and in very fair health.

Examination of the fluid which drained away showed that the destruction of the pancreas was advanced. In the previous case recorded, the pancreatic fluid showed rapid starch, and slow protein and fat digestion. In this case protein and fat were not digested at all, and starch only slowly. The stones were found to be mainly calcium carbonate, with a very small admixture of phosphate. They were of the same type as previously noted, pale yellow in colour, studded like coral, friable, and the central ones roughly faceted at each end. No bacteria were discovered in them.

Comment.

Certain points of interest emerge from a consideration of this case.

1. The symptomatology repeats that of the previous case recorded, in that the pain began mildly as an ache half an hour to an hour after food and culminated in severe colic with sweating but no vomiting, a point of interest in comparison with gall-stone colic. The pain began in the epigastrium and radiated later to the left side of the abdomen. This left-sided radiation has been noted in other pancreatic disturbances, such as the subacute forms of pancreatitis and penetrating gastric ulcers involving the pancreas.

2. The operative findings, the string of soft stones in the main duct, the small particles of grit surrounding it in the lesser ducts, well shown in the X rays, and, beyond, the fibrotic back-pressure pancreas suggest an origin of these calculi other than recurrent attacks of subacute pancreatitis. More probably they are catarrhal in origin, from an ascending infection from the duodenum, and closely allied to those seen in the submaxillary gland and duct. Mayo Robson [6] originally gave the name "pancreolithic catarrh" to this condition. I operated on a case last year, in which that part of the head of the pancreas surrounding the duct of Santorini showed extensive calcification all over its surface. This area of the gland was

contracted below the level of the rest of the pancreas. It was causing recurrent attacks of pain, with slight jaundice from pressure on the common duct. The gall-bladder was healthy, a dilated common duct was explored, it contained no stones, but was stenosed opposite the calcified area. As the stools had shown no signs of pancreatic deficiency and the rest of the pancreas appeared healthy to the naked eye and exploring hand, a cholecystogastrostomy was performed. The patient has remained perfectly well since and has put on weight. This case appears to be one of pancreolithic catarrh limited to the area drained by the duct of Santorini, which does not anastomose with the duct of Wirsung in 10 per cent. of cases, as shown by Opie,[7] who quoted a case of acute pancreatitis limited to the area of the duct of Santorini.

3. The tolerance of the pancreatic duct to the presence, for five days, of a rubber tube which transmitted 21 oz. of juice in that time has, I think, a direct bearing on the theories and experiments of Kaufmann.[8] Not in any local infection, irritations, or foreign bodies are we to look for the source of that calamitous disease, acute pancreatitis, but rather a hæmatogenous origin, bacterial or possibly a perverted hormone stimulating and activating improperly the vital ferment, trypsinogen.

In conclusion, my thanks are due to Prof. Ellis. Dr. Jupe, and Dr. J. R. Marrack for their kind assistance in the investigation of this case.

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Clinical and Laboratory Notes.

A CASE OF RHEUMATIC FEVER WITH MYELOCYTIC LEUCOCYTOSIS.

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THIS case is of interest on account of the unusual character of the leucocytosis which occurred in the course of the illness, the prevailing white cell being the myelocyte rather than the more mature polymorphonuclear leucocyte which is usually found in such cases.

A male patient, aged 37, was admitted to hospital on Nov. 27th, 1927. He was a hawker by occupation, living in a caravan and much exposed to the weather. He was a strong robust man and had enjoyed good health until six weeks previously when he developed an attack of rheumatic fever following a thorough soaking. At this time his left ankle- and knee-joints were swollen and painful, and after a day or two in bed he resumed his usual work before the pain had completely subsided. The pain in these joints continued with occasional exacerbations until ten days before admission, when severe precordial pain developed and he was forced to go to bed and remain there. While the precordial pain lasted respirations were embarrassed even at rest. After six days in bed this pain disappeared and he was conveyed to Glasgow by caravan from the North of England, a distance of 140 miles.

On admission he was very ill, he perspired freely, and suffered from great general weakness and loss of appetite. The right thigh, knee, ankle, arm, and left mandibular joints were very tender. He had a cough with copious mucoid spit, and in the left lung numerous coarse, moist râles, indicative of bronchitis, were heard. Albumin was present in the urine. The cardiac area was well within normal limits, the sounds were forcible and of good tone, and there was no evidence of endocarditis or pericarditis. Nine years earlier patient had had pneumonia but there was no history of previous attacks of rheumatism.

After the first few days in hospital the joint pains subsided to a great extent in response to treatment with sodium salicylate and the patient, although still very ill, seemed to be improving. However, on Dec. 1st pericardial friction was noted and the bronchitis assumed the character of a capillary bronchitis. The pericardial friction disappeared after two days and there was never any evidence of pericardial effusion or of cardiac dilatation. On the 5th there were signs of pneumonic consolidation at the base of the left lung and it was noted that there was now a leucocytosis of 53,000 white cells, although on the 3rd examination of a blood film gave evidence of an apparent increase in the number of white cells. On the 3rd, also, a tender swelling appeared over the right costal margin in the nipple line and it was this which suggested a differential count of the white blood corpuscles. By the 7th the consolidation of the lower lobe of the left lung reached as high as the interscapular region and there was gaseous distension of the abdomen. The swelling on the costal margin was now not so tender and it had rather lessened than increased in size. Its nature still remained unknown. From Dec. 1st the patient was obviously critically ill. He was sleepless, restless, and latterly delirious. The temperature varied from day to day and ranged from 100° to 104° F. The pulse-rate varied from 100 to 148, and the respirations from 28 to 52. The patient died on Dec. 8th.

The spleen and superficial lymph glands were never palpable and there were no hæmorrhages from mucous surfaces and no purpuric spots. The Wassermann reaction was negative and there was no growth on blood culture after seven days' incubation. On Nov. 28th and 29th the leucocyte count was within normal limits, but by Dec. 3rd a leucocytosis of approximately 35,000 white cells was noted on examination of a blood film and on that date also the myelocytic nature of the leucocytes was discovered for the first time. The patient also had a fairly profound anæmia and the colour-index equalled unity.

Table of Blood Counts.

Date.	Red cells.	White cells.	Hæmoglobin.	Colour-index.
1927.				
Nov. 28th	—	6,200	—	—
„ 29th	2,200,000	5,000	47%	1
Dec. 5th	2,260,000	53,200	44%	1
„ 6th	—	27,800	—	—
„ 7th	—	34,200	—	—
„ 8th	—	27,000	—	—

Examination of blood films taken on Dec. 3rd, 6th, and 8th revealed the red cells to average 9·2 microns in size. They all stained well, although some polychromasia was noted in a number of forms. Seven megaloblasts and six normoblasts were present in counting 3000 white cells. Differential counts, each on 1000 white cells, were carried out on the above dates and the various forms of white cell were found to be present in the following proportions.

Table of Differential Counts.

Type of cell.	Dec. 3rd.	Dec. 6th.	Dec. 8th.
	Per cent.		
Neutrophile—			
Polymorphs	3·2	3·1	3·2
Metamyelocytes	3·9	4·3	3·6
Myelocytes and premyelocytes	78·7	87·5	89·4
Eosinophil myelocytes ..	0·1	—	—
Basophile myelocytes ..	0·2	—	—
Myeloblasts	1·9	0·1	—
Monocytes (large hyaline cells)	0·9	0·8	—
Lymphocytes	11·1	4·2	3·8

Permission for post-mortem examination was refused.

Discussion.

The case was regarded as one of rheumatic fever with pericarditis and pneumonia, but the former complication seemed to subside satisfactorily. It is not obvious why the patient did not recover as the complication of pneumonia is rarely a cause of death in rheumatic fever. Blood films were not examined until Dec. 3rd, when the swelling appeared at the costal margin so that it is not known at what date the myelocytes appeared first in the circulating blood, but it was thought that the leucocytosis was determined by the advent of the pneumonia.

It is well known that immature leucocytes can appear in the circulation in the general leucocytosis of acute infections—e.g., pneumonia and acute rheumatism—but as a rule in these diseases the myelocytes are relatively few, the predominating cell being the neutrophile polymorph. Naegeli [1] quotes a case of croupous pneumonia published by Türk in which the number of myelocytes reached 11·9 per cent. of the total white cells, and another case, one of necrotic tonsillitis complicated by severe anæmia, observed by Morawitz, in which the neutrophile myelocytes numbered 20 per cent. of 22,100 leucocytes per c.cm. In both of these cases the number of myelocytes present in the blood was regarded as being extremely high. Neutrophile myelocytes also occur in varying proportions in severe forms of anæmia and in invasion of the bone-marrow by tumour metastases, but it is unusual to get such a high percentage as in the case now put on record.

In other rather different conditions high neutrophile myelocyte counts have also been recorded. Prof. W. K. Hunter [2] quotes a case of fracture of the leg observed by Simon in which the myelocytes present in the blood numbered 15·2 per cent. of 50,000 white cells. In this case the blood returned to normal on recovery. He also records the case of a girl, aged 5, with an enlarged spleen in whose blood 24 per cent. of the white cells were neutrophile marrow cells. To begin with, she was thought to suffer from leukæmia, but she made a good recovery, and ten years later was in robust health.

It is in leukæmia, however, that the neutrophile myelocyte is present in the blood in greatest numbers, and rare cases have been noted in which this cell is the prevailing cell (Alder, quoted by Piney).[3] A leukæmic condition of the blood is found in myeloid chloroma and myeloid myeloma, and in this connexion the possibility of the tender swelling over the costal margin being a chloroma or myeloma was considered, but the character of the blood picture and the fact that the swelling seemed to be situated over the cartilaginous part of the costal margin did not appear to indicate any association between it and the myelocytosis. In the absence of histological examination of the bone-marrow no definite conclusions can be arrived at from the data afforded by this case as to the cause and significance of the blood picture, but it is thought that it may be due to a toxic or chemiotactic influence on the bone-marrow, affecting particularly the neutrophile hæmopoietic tissue. However, the fact that a neutrophile myelocytic leucocytosis may occur in the course of rheumatic fever complicated by pericarditis and pneumonia is of interest and worthy of note.

I gratefully acknowledge my indebtedness to Prof. Hunter for permission to publish this case.

[1] See Ehrlich and Lazarus: Anæmia, 2nd ed.
[2] Hunter, W. K.: Recent Advances in Hæmatology, 1911, 88; Glasg. Med. Jour., January, 1928, p. 16.
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A NOTE ON ULTRA-VIOLET RADIATION IN THE TREATMENT OF PEMPHIGUS NEONATORUM.

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Pemphigus neonatorum may be simple or may be serious, and is one of the conditions which have a tendency to linger a long time, may be for years, in connexion with a maternity department. There may be a period of apparent immunity extending over months and no case occur; then, without any obvious cause, a new outbreak takes place.

The degree of severity varies considerably; in some cases one single bleb, in other cases hand and foot are invaded. It is rare that one finds the disease to end fatally. Recovery is the rule, even in patients showing extensive areas of infection. Sometimes one has observed the initial blister to occur in the region of a nerve, particularly on the upper arm, on the hand and foot. Consequently, one is prompted to ask if the condition is in the nature of a toxic neuritis, resembling herpes zoster; or is it an infection during labour; or is it brought to the bedside by the nurse, midwife, or is it air-borne?

From personal observations I have formed the opinion that pemphigus neonatorum is a toxic neuritis and constitutional in origin. The disease is found most commonly in the infants of women who are in a low state of health at the time of confinement. The blebs first make their appearance in the region of the musculo-spiral and posterial tibial nerves, sometimes after the infant's first bath. In all cases observed the umbilical cord has been beyond suspicion. Considerable investigations have been made at this hospital to determine whether the nurse-midwife has been the medium of infection, and no evidence has been found that she is.

As regards treatment, it has been found that the most successful procedure is to keep the infant dry and to avoid bathing of any form. The necessary toilet is carried out with oil, and dryness maintained over the whole body. Bathing spreads the disease. Ointments, lotions, powders in various combinations have been tried successively without any very encouraging results. A series of cases have been treated by ultra-violet radiation with great success. The blebs soon dry and disappear, and the infant improves in general condition. The mercury-vapour lamp was used twice weekly, at a distance of 2 feet for 3 minutes, increasing by 1 minute to 6 minutes.

The main purpose of this short note is to recommend this form of treatment as being efficient, easy of application, cutting short the disease, and invaluable in removing a source of anxiety to the mother.

A CASE OF PARTIAL GASTRECTOMY FOR PYLORIC ULCER,

FOLLOWED BY TWO JEJUNAL ULCERS PERFORATING AT INTERVALS OF SIX MONTHS; RECOVERY.

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The case recorded below appears to be of sufficient interest to warrant publication.

First Operation.—In January, 1927, a man, 25 years of age, was operated upon by Mr. S. Ritson in Sherburn Hospital for an ulcer on the duodenal side of the pylorus. The operation performed was Bilroth II.—a pylorectomy with closure of the ends and a posterior gastro-jejunostomy. He recovered.

Second Operation.—He had no further symptoms until he was seized with severe abdominal pain at 11 A.M. on August 4th, 1927, on which date at 8 P.M. he was admitted into the Sunderland Royal Infirmary with a perforated jejunal ulcer under the care of Dr. Ayre Smith, senior surgeon. His bowels had acted on that day and he had vomited several times. There was marked shock, with cold clammy sweat; thoracic respirations; and the abdomen was rigid but resonant. Temp. 98·8° F., pulse 96, resp. 28. A rectal examination revealed nothing abnormal. An immediate operation was performed. On opening the abdomen in the midline, gas and fluid escaped. A perforated ulcer, ¼ inch in diameter, was found in the jejunum close to the anastomosis. It was sutured and covered with omentum, and the abdomen closed in two layers without drainage. He recovered and was discharged on August 27th. His bowels were kept acting with liquid paraffin and he remained well for five months.

Third Operation.—On Jan. 25th, 1928, he began to have abdominal discomfort and on the 28th he was readmitted into the infirmary with severe epigastric pain, which had come on at 3 P.M. the same day. He had vomited and the pain was exactly like that which he had experienced on August 4th last. At 11.30 P.M. he was found to be suffering from severe shock with a cold sweat. Temp. 97·6° F., pulse 86, resp. 24. The tongue was moist but furred; and the abdomen was rigid especially in the upper half, which was tender, particularly to the left of the midline.

No free fluid was made out. A second perforation was diagnosed. At midnight I opened the abdomen through the old scar; gas and fluid escaped. A second perforation was readily found on the anterior surface of the jejunum distal to the anastomosis. This was sutured with catgut and covered with omentum. The fluid was mopped out and a rubber drain was inserted into the lower end of the wound and was left in for 24 hours. He made a good recovery and on Feb. 10th, while on light diet, a test-meal revealed the following:—

	Before test-meal.	After test-meal.
Free acid	24	55
Combined acid	16	24
Total acidity	40	79

As the acidity in an average normal person is given as free HCl 20–40, combined acid 25, and total acidity 40–50,[1] this test showed that there was still hyperacidity of the gastric juice, which the gastro-jejunostomy had failed to cure. A gastro-enterostomy usually reduces the hyperacidity by permitting a quicker emptying of the stomach contents and by allowing a reflux of the alkaline bile and pancreatic juice into the stomach. A pylorectomy cannot be expected to reduce the acidity of the gastric juice, seeing that the HCl is secreted by the oxyntic (acid-producing) cells, which exist chiefly in the middle half of the stomach. Apart from the continued hyperacidity there was no other cause found for the recurrence of the ulcers. He was therefore advised as to his diet and it was suggested to his medical attendant that he should have alkaline treatment continuously to reduce the persistenthy peracidity.[2] He was discharged on Feb. 13th.

This note appears by courtesy of Dr. Ayre Smith.

[1] Medical Diagnosis, Greene, 6th ed., 1926.

[2] THE LANCET, Jan. 7th, 1928, p. 14.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF PSYCHIATRY.

MEMBERS of the British Psychological Association were invited to attend the meeting of this Section on March 29th, when Dr. R. LANGDON-DOWN, the President, took the chair, and a discussion on the

ÆTIOLOGY OF ALCOHOLISM

was opened by Dr. BERNARD HART, who defined alcoholism simply as the continued and excessive ingestion of alcohol, and reviewed the answers that had been offered to the question: Why do people take alcohol to excess, or, indeed, at all? Some answers had emphasised heredity, others habit and the vicious circle, and others again psychological conceptions. It seemed that the last were tending to exclude the others unduly. The modern psychologist held that the forces which drove men to take excessive alcohol were, in some measure at least, identical with those which drove them to take it at all. Therefore the cause of alcoholism must be sought by inquiring into its effects. F. G. Stockert had divided these into two groups: (1) psychomotor stimulation coupled with an expansive and euphoric affective tone; and (2) a dissociative, dulling process extending to paralysis. How far the psychomotor stimulation was real was disputed, but ergographic experiments had shown that small doses produced an actual increase in the output of work for a short time. The subjective increase was, however, much greater and more important. The astonishing efficiency of alcohol as a refuge was apparent not merely in the way it met an immediate need, but in the continued service it afforded so that many of the symptoms of chronic alcoholism and of the alcoholic psychoses themselves gave further aid in the escape from reality. Possibly the euphoria was only to be explained in chemical terms, and possibly it was in part a secondary result of the removal of inhibitions which underlay many of the phenomena of alcoholism; there was relief from such morbid inhibitions as shyness, and a failure of those inhibitions which control immediate urges in the interest of remote ends and hence exhibition of conduct at the mercy of every passing desire. The sociability produced was one of the principal aims of taking alcohol. Psycho-analysts held that alcohol tended to destroy sublimations and aid mental regression, that homosexual factors played a prominent part, and that regression might proceed to various depths. It was debatable how far any particular effect of alcohol was to be regarded as an aim and how far it was a price paid in the achievement of some other end. The psychological aims did not exhaust the whole problem and other factors required careful consideration. The first of these was the essential craving, which did not arise prior to experience of alcohol and disappeared after prolonged abstinence. It did not seem susceptible of any satisfactory psychological explanation. The closely similar phenomenon of morphinism was certainly attributable to the formation of chemical products which required further doses to counteract their effects. Most investigators were agreed that in certain types, such as manual workers, the craving might be sufficient to induce alcoholism in the absence of any "refuge" urges. The psychological aims, craving, and habit constituted the "exciting causes." It would seem easiest to explain the "predisposing causes" on the assumption that alcoholism, neuroses, and psychoses were alternating methods of achieving an escape from a reality to which adaptation had been found impossible. Since all of them occurred more often in some stocks than others, a constitutional factor must be admitted. Kretschmer had divided chronic alcoholic into a pyknic, cyclothymic "sociable" type and a schizoid, difficult and nervous type. Many authors considered this classification to be of paramount importance, and distinguished sharply between the taking of alcohol as a beverage and as a drug, between the man who drinks as a custom and the man who cannot stop. In practice, however, the factors were inextricably mingled. Dipsomania had been held to be a manifestation of epilepsy, of psychasthenia, and of manic depressive insanity, while others regarded it as a symptom-complex and not a disease sui generis. There was therefore a wide range of opinion as to the relative importance to be assigned to the various factors, ranging from MacCurdy's dictum, "The alcoholic is, before he even touches a drop, an abnormal person," to those who maintained that alcoholism might arise quite fortuitously in a normal man. The solution was not to be found in any single or specific mechanism, but alcohol might serve several ends, and various types of individual, on account of their hereditary constitution or prior history, might be more or less likely to avail themselves of alcohol as a means of securing those ends and hence to engender processes to which habit would ultimately contribute its part.

The Psycho-analysis of the Alcoholic.

Dr. E. GLOVER, dealing with the problem from the psycho-analyst's point of view as a maladaptation rather than a disease, said that all the primary features of alcoholism represented fundamentally an attempt on the part of the individual to extricate himself from an impasse. From the environmental side it was a flight from reality, which coincided on the instinctual side with an increase in phantasy formation. Clinical differences could be related to the completeness or periodicity of this withdrawal from reality. The investigator was too apt to dismiss the drunkard's phantasy life by calling him "an inveterate liar," and to obscure its significance by the word "confabulation." Hallucinations and delusions indicated an attempt to substitute a new reality for the old, or to project into reality the mo

ainful elements of phantasy life. The so-called eakness of will, lack of decency, and moral deteriora-on were the gratification of previously inhibited apulse. Withdrawal from reality activated phan-sy corresponding to definite layers of psychic velopment, so that an element of regression was ways present, heading towards some infantile end. ggressive and sexual instincts were manifestly atified in drunkenness. Projection was a character-ic feature of all alcoholic states. The chronic inker shelved responsibility and attributed his bits to his social or marital difficulties. The eudian school, while admitting the social, habitual, d economic factors in alcoholic ætiology, held at these were "exciting" causes, with internal, stinctual frustrations as the real underlying cause. ycho-analytic investigation of the alcoholic always owed a modification of instinct in the form of tense preoccupation with oral images and phantasies. ie alcoholic had made a bad start and was always mpered by a tendency to regression, giving rise to ertia in development. Thus the next stage found m already handicapped, and in this stage anal otism and anal sadism were heightened. He then me to the third or infantile genital stage with the uble difficulty that his impulses were archaic and s reaction to disappointment excessively severe. hen the incestuous climax to infantile sexuality as shipwrecked on castration anxiety, the tendency regression was fully established, and the ground epared for future miscarriages of sexual instinct in ult life. One of the dire necessities that drove man to alcohol was the need to overcome excessive arges of castration anxiety. The drunkard's loud astfulness afforded compensation for inner insuffi-ency or impotence (symbolic castration). When the o was damaged the anxiety broke through in assive charges. The ego of the alcoholic was over-arged with narcissistic libido, and he hardly dared ve anyone who could not be identified with the self. ie stage at which the ego began to lag in develop-ent was a second factor in the variety of alcoholic anifestations. Many of the guilts and anxieties of coholics indicated some interference with the nction of conscience; the constant use of pro-tion made their consciences seem turned inside t. The alcoholic either had a more severe primitive nscience than normal, or else was unable to cope th the drive of primitive impulse and landed nself in situations of self-punishment. The former ficulty was seen in the depressed type of secret nker and the latter in chronic alcoholics. The use of alcohol invariably led to self-punishment, ch as organic illness or economic failure. Alcohol s chosen as a surrogate of sexuality or a method of ort-circuiting it, while releasing the pressure of pression and reversing processes of sublimation. cohol owed most of its attraction to the fact that was primarily well-adapted to overcome castration xiety, although in the long run it defeated its own l by bringing about impotence and death (symbolic stration).

The Recent Decrease in Alcoholism.

Dr. E. MAPOTHER doubted whether from the stand-int of psychology any advance had been made for ousands of years in the understanding of the oblem of why men take alcohol. He quoted ripides to show that euphoria and the effect of ohol in submerging conflict and cloaking reality d been well known to the Greeks. Much of the eged advance had been no more than the turning poetry into prose and platitude into jargon, the fusion of tabloid thought among meagre minds. e dangerous drinkers were those who looked for se and sought peace and ensued it, and also those o took alcohol "on doctor's orders." Normal nkers took alcohol because, although they knew it be bad, it made them feel good. Furtive alco-lism was only found in those who were already normal. Alcohol had been called the anæsthetic the poor, but was quite as popular among the well-do and was not regarded in such a negative light by the poor; they drank to regain their illusions. Most alcoholism that sought negative effects was morbid, but much of it was at first positive and later became increased by habit. Important questions were: Why did alcohol induce euphoria; what influences encouraged and discouraged the use of alcohol by those in quest of euphoria; why did alcohol act as a narcotic; how often was drunkenness designed to dull grief, remorse, or fear, or how often was it the accompaniment of a particularly painful memory or some current conflict? The first question was only to be tackled by the neurologist and the biochemist: another phase of the search for happiness in a bottle! The modern scientific view was that the effect of alcohol in all stages and on all parts of the nervous system was depressant; that it was a narcotic drug. The view of Dr. Stockert was more cheerful and seemed to Dr. Mapother sound. Euphoria did not occur in the early stages of other gradual reductive conditions like fatigue or neurasthenia. Beyond doubt, social influences were the most important in promoting festive alcoholism. He quoted figures to show the striking decrease in the consumption of alcohol between 1914 and 1923. If all the drunkards in the country had gone dry it could not account for the amount. Alcoholism was conditioned by social tradition on the one hand and the cost of getting drunk on the other. A reduction of alcoholic morbidity to about one-third of its pre-war incidence had occurred. Temperance and intemperance were national characteristics and not innate, as was shown by the fact that 13 per cent. of all psychoses among Gentiles were alcoholic, and among Jews only 2·3 per cent. The psychoses of the solitary drinker were less rare, relatively, among Jews; it was the acute mental disorder due to heavy social drinking that was rare among them. Dr. Mapother had not been impressed by the existence of any specific craving independent of an association of ideas, nor had he seen benefit from the giving of alcohol in early delirium tremens. It was possible that alcoholic tolerance depended on the presence of some protecting lipoids circulating in the blood. If so, they were obviously more likely to be preventing the entry of alcohol into the cell than producing reverse effects. They were no more likely to produce a craving for alcohol than would a mackintosh for rain. He had not found a history of overt homosexuality in alcoholics, nor that this formed a feature of their delusions and hallucinations.

Types of Drinkers.

Dr. H. CRICHTON MILLER said that in the broadest sense it might be held that alcohol was taken to modify the feeling tone, in the realm either of somatic or of emotional experience. The resulting modifications might be referred to two chief mechanisms: (1) interruption in continuity of functioning of the nervous system, ranging from incoördination to dual personality; (2) a repressive change whereby the activity of cortical centres was subordinated to thalamic control, acquired inhibition succumbing to instinctive pressure and conceptual thinking being submerged by perceptual activity. It might be supposed that these changes depended on two mechanisms; the change in intracranial pressure and the hypothetical alteration in synaptic functioning due to altered chemical constitution of the cerebro-spinal fluid. The latter would explain the dissociative phenomena. There was no experimental knowledge of the specific effect of alcohol on the relative tension in intracranial and visceral systems. It might be supposed that the vascular tension was differently affected in cortex and midbrain. Any effortless oblivion was an alluring retreat from most forms of conflict. A retreat from conceptual to perceptual ideation was often pleasant, if not desirable. The introvert found in alcohol a chemical solvent of the inhibitions that dammed up his self-expression; the man with an inferiority sense felt himself 100 per cent., and the psychasthenic derived from alcohol a temporary rise in the threshold of consciousness. The demand of two groups for alcoholic euphoria

was based on physical states—viz., the hypopietic and the subthyroidic. Probably low blood pressure entered into a large proportion of all cases of alcoholism, especially amongst women. Presumably the mechanism of satisfaction in subthyroidics was a general vasomotor stimulation. Hyperthyroidics did not tend to be steady drinkers. In the sensorial type, who sought modifications of sensory experience, came those who alternated alcoholism with auto-erotism. The rebel drank because his father had been a temperance reformer, and for him gold cures and injections of alkaloids were the height of absurdity. There were three chief groups of intermittent drinkers: the epileptic, the dual personality, and the manic-depressive. The last were resistant to all treatments. Drinking might be a feature of either phase, but never of both. No simple formula and no single ætiology would cover the pathogenesis of alcoholism.

Discussion.

Prof. G. M. ROBERTSON agreed that there was no single formula, pathology, or therapeusis for alcoholism. He thought that there was an hereditary lowering of mental function, so that the individual lost the capacity of dealing with his difficulties and so gave way. He doubted whether the craving for alcohol were to be compared with the chemical change in the blood which produced the morphia craving.

Dr. W. H. STODDART defined alcoholism as a state in which a person feels the need of alcohol, and quoted cases to show that this need might be felt imperatively before alcohol had been taken. To cut off alcohol too severely in cases of delirium tremens might be a serious thing.

Dr. A. E. CARVER said that patients who had alcohol without knowing they were having it became euphoric. He believed that the craving was felt before inbibition; it was natural for a man to crave for something to relieve him when he felt things were "getting on top of him."

Dr. T. A. ROSS said that the alcoholic was not uncomfortable when his alcohol was cut off, provided he were being looked after and had confidence in his doctor; only if he were overcome by some overwhelming emotion he would have the craving, which was wholly psychological.

Dr. J. A. HADFIELD said that alcoholism appeared in individuals who found the responsibilities of life too heavy. This formula linked up with many of the other ætiological factors: the temperamental, the hereditary, the physical, and the psychological. The individual who never really grew up, never got confidence, or that sense of security and protection that every child ought to have, naturally developed a fear of life in general and tended to become fixated, seeking for security and escape from life. He did not get love for others in his childhood; he loved himself or persons of his own sex (which was self-love once removed), and therefore he could not face the difficulties of life. He took to alcohol because it produced euphoria, the forgetting of difficulties and the liberation of those thalamic factors which made life so jovial.

Dr. M. LEAHY described success with suggestion treatment, replacing the idea, "I need drink, I must have drink," with the idea, "I do not want to drink." This would not cure every case, but if the patient were sufficiently receptive it would prevent him from drinking.

Dr. J. D. ROLLESTON referred to the historical aspects of alcoholism, which in antiquity had been almost entirely convivial and to some extent religious, except where associated with prostitution. He mentioned also the importance of alcoholism of therapeutic origin.

Dr. W. BRANDER suggested that euphoria might be due to alterations in the intracranial blood pressure or to the presence of alcohol in the cerebro-spinal fluid, comparing it with the euphoria of general paralysis and disseminated sclerosis. The body adapted itself to alcohol in many ways other than mental—e.g., the digestive secretions and the pH became altered, and being thus adapted it was uncomfortable in the absence of its habitual stimulus.

MANCHESTER MEDICAL SOCIETY AND LIVERPOOL MEDICAL INSTITUTION.

AT a joint meeting of these Societies, held at Manchester on March 8th, a paper on

Colloidal Lead

was read by Prof. W. J. DILLING (Liverpool). He said that the following standards had been approved in judging the suitability of colloidal lead preparations for the treatment of cancer: (1) that intravenous injections representing 0·025 to 0·05 g. of lead per kg. of body-weight should be tolerated by rabbits without local irritation or immediate or late symptoms; and (2) that similar injections in cats should cause neither respiratory nor circulatory disturbance. The latter, he said, was the greater safeguard since a decided, although brief, fall in blood pressure, synchronous with and due to impairment of the contractility of the auricular muscle, resulted from injections of ionised lead solutions and many colloidal lead preparations. Tracings from cats showed this effect on the auricle and the consequent diminution of the pulse-wave and of blood pressure; frequently repeated large doses of "approved" lead colloids could produce similar effects. Microscopical examination of the tissues of mammals injected with lead colloids revealed fine granules, and microchemical tests indicated that these were colloidal lead. A series of microphotographs showed them free in the blood-vessels and inside leucocytes. The spleen contained large numbers in the splenic pulp, free in the blood sinuses, forming extranuclear rings in the splenic cells and concentrated in the phagocytic splenocytes; the malpighian corpuscles contained relatively few—and more minute—particles, or sometimes none. The liver contained particles but their distribution varied; they occurred in the blood sinuses, in the hepatic cells, and in the endothelial cells of Kupffer. In the kidney, particles had been found within the glomeruli and punctuating the outlines of the convoluted tubules. This organ almost invariably showed evidence of degeneration of the secreting cells of the cortical tubules, loss of nuclear staining and occasionally necrosis; glomerular congestion and hæmorrhage had also been observed. Particles also occurred in the lung, but owing to the presence of carbon granules their exact distribution was uncertain. In no other tissue had granules been found with certainty. Microphotographs of the spleen and the liver of a man who had lead acetate poisoning had also exhibited granules in comparable positions. Chemical analysis of mammalian tissues from these experiments with the chromate method confirmed the belief that the lead was in highest concentration in the spleen, liver, lung, and kidney and in the blood. The percentage in other tissues examined, including bone, was relatively low, but indicated the commencement of excretion by the bile and urine. The lead granules were apparently concentrated chiefly in the reticulo-endothelial system but it had not yet been possible to trace them to the endothelial cells of the lymph glands, of bone-marrow or of connective tissue. The only organ in which histological damage was apparent after large colloidal lead injections in animals was the kidney, a fact of considerable clinical importance.

Mr. F. J. S. HEANEY (Liverpool), in a paper on

Gastric and Duodenal Cases,

described a series of 183 consecutive cases of gastric and duodenal ulcers operated on by him during the past four years. With the assistance of Dr. R. Aidin he had followed them up and had ascertained the

esults after a year in about 90 per cent. of them. The cases comprised 33 perforations, 65 chronic uodenal ulcers, and 85 gastric ulcers. Among the 3 perforations the early mortality was 8·7 per cent., nd the follow-up showed good end-results in 0 per cent. of the remainder. In 31 of the 33 cases, n addition to repair and pelvic drainage, gastro-nterostomy was performed. There were two nsatisfactory end-results: (1) a case in which gastro-nterostomy had not been performed, and (2) a case here the gastro-enterostomy opening contracted; oth of these required a further operation. For hronic duodenal ulcer the operation done consisted f a vertical gastro-enterostomy running into the owest point of the great curvature, in some cases ith infolding of the ulcer and in some with append-ctomy. The mortality in hospital was 3 per cent., lmost entirely from post-operative pulmonary omplications. The "follow-up" showed good end-esults in 90 per cent. of those leaving hospital alive. here were two gastro-jejunal ulcers (3·1 per cent.), ne arising four months and one four years after astro-enterostomy; both were cured by partial astrectomy. The other unsatisfactory end-results ere seen in patients who for one reason or another id not have appendectomy performed at the same me as gastro-enterostomy. Present symptoms in lmost all of them were suggestive of recurring ppendix trouble. This, however, might have been coincidence as no such results were seen in the cases f gastro-enterostomy for perforation, in none of which he appendix had been removed. Chronic gastric ulcers aried so much in clinical picture and operative ndings that for the purpose of useful comparison they ere subdivided into complicated and uncomplicated. he uncomplicated were small or moderate-sized lcers situated at the pylorus or near the lower part f the lesser curvature, without serious adhesions. he complicated were the larger ulcers of the posterior all, those with perforation of neighbouring structures, ose situated high in the stomach, those accompanied y cholecystitis, ptosis, or hour-glass contraction. f the 55 uncomplicated cases, gastro-enterostomy as performed in 54, with 2 deaths, both from ulmonary complications. In the remainder the d-results were uniformly satisfactory. Mr. Heaney iefly referred to present views on ætiology of ulcers, d the relation of chronic gastric ulcer to gastric ncer. In his series of cases there was no instance of ncer being found after simple gastro-enterostomy r gastric ulcer, nor was there any instance of ncer arising after excision or gastrectomy where the ecimen removed at operation was reported histolo-cally non-malignant.

Dr. N. B. CAPON (Liverpool) described a case of ontiasis ossea (diffuse osteitis type) in a boy of 3 years.

MANCHESTER PATHOLOGICAL SOCIETY.

AT a meeting of this Society held on March 14th, r. F. H. WESTMACOTT, the President, in the chair, address on

Normal and Abnormal States of the Connective Tissues in the Breast

as given by Sir GEORGE LENTHAL CHEATLE.

Dealing first with the general supporting tissue of e breast, he said that, like fibrous tissue elsewhere, was liable to develop sarcoma and fibroma, but ese were not true breast changes. A sarcoma could ly be diagnosed from a fibro-adenoma by a whole tion of the breast. It was impossible to separate perplasias of the true breast connective tissues om the accompanying epithelial hyperplasias. The thological importance of the combination was seen the papillomata. Physiological influences had a at bearing on the generalised (and as a corollary the localised) hyperplasias. In the section shown the breast of a woman aged 42, which most ople would say was in a state of chronic mastitis, o points were striking; first, the presence of fibro-adenomata, formed and forming; and, secondly, the hyperplasia of the pericanalicular and peri-acinous connective tissue. A consideration of the normal breast at puberty and at birth would show physiological relationships between the formation of fibro-adenomata at puberty on the one hand and the so-called chronic mastitis on the other. Both of these conditions were manifest in the specimen described. In the normal breast at puberty there was an enormous increase of acini and a hyperplasia of the peri-canalicular and periacinous tissue, amongst which lymphocytes were common. The fibro-adenomata which were so common at puberty consisted of hyperplasia of the pericanalicular and periacinous tissues, and in some of them new acini developed so that in the pathological part of the breast there was occurring only an irregularity of the physiological activity progressing in the rest of the same breast. Lobulation of fibro-adenomata was not due to out-growths from the original tumour but to primary similar and later changes in the breast tissue adjacent to it. The presence of lymphocytes amongst the hyperplastic pericanalicular and periacinous tissues in the normal breast at puberty gave all the morpho-logical characteristics of so-called chronic mastitis, and was thus evidence that "chronic mastitis" was an incorrect term.

At birth it was impossible to distinguish a male from a female breast and in both a desquamative epithelial hyperplasia filling the ducts, together with a hyperplasia of the pericanalicular and peri-acinous connective tissue containing lymphocytes, gave an appearance which, in the adult, would certainly be diagnosed as chronic mastitis. This condition in the adult was not an inflammation but a physiological change, become pathological by reason of its irregularity and its excess of the normal. In passing, it was pointed out that most breasts of the age to which this condition belongs only appeared nodular on the surface owing to hypertrophy of the ligamenta suspensoria of Cooper, which isolated fat nodules. If the skin were undercut the nodularity disappeared. Such breasts were never adherent to the pectoral fascia, as might be the case in the rare nodular breasts which were the seat of carcinomata.

The elastica was next considered. Hyperplasia might be (1) general and associated with carcinoma or with dysgenetic epithelial hyperplasia, or (2) local, in conjunction with carcinoma, epithelial hyperplasia, Paget's disease of the nipple, or hyperplasia of the intra-elastica. It did not represent a local resistance to the malignant invasion. Finally, hyperplasia of the intra-elastica was described. In this state it often underwent early degeneration. Hyperplasia of this tissue did not affect the whole breast and it might not form a localised tumour. On the other hand, it might form one kind of intracanalicular fibro-adenoma (which the lecturer believed to be common), and also certain uncommon, unbranching papillomata.

SEAMEN'S HOSPITAL SOCIETY.—The Duke of York presided at the annual court of governors of this Society held at the Hotel Cecil on March 20th. The new Queen Alexandra Memorial Hospital (60 beds) for seamen at Marseilles, opened on Jan. 1st, with a British resident medical officer, secretary, matron, and nursing staff, was, said the Duke, the seventh establishment for which the Society was responsible. Science was making seafaring safer but there were still accidents and diseases, to relieve which the Society existed. In its hospitals it helped people of many nations, thus making friends for Britain all over the world. The Society had received some £4000 from the Hospital Savings Association, but it was, he said, the duty of everyone to help the seamen. Sir Arthur Clarke submitted a report showing that over 5000 in-patients and 23,000 out-patients had been treated during the year for an expenditure of £80,000, while £6000 remained to be carried forward. The French Ambassador, who proposed thanks to the Duke, congratulated the Society on its new hospital at Marseilles. Mr. Neville Chamberlain (Minister of Health) seconding, said the seaman had a hard life, with a mortality from disease 50 per cent. greater than that of landsmen, and fivefold theirs from accident.

Reviews and Notices of Books.

HEALTHY GROWTH.

By ALFRED MUMFORD, M.D., Medical Officer of Manchester Grammar School. London: Humphrey Milford, Oxford University Press. 1927. Pp. 348. 16s.

THE author explains the scope of his book by giving it the subtitle of a Study of the Relation between the Mental and Physical Development of Adolescent Boys in a Public Day School. The work is scholarly and original both in subject matter and method. Dr. Mumford has been at pains to acquaint himself with the work of previous anthropometric investigators, and the methods which he has employed are to a large extent based upon the experience of others; but the scope of his observations is wider than that of any of the earlier observers.

The purpose of the book can best be grasped from the author's own words: "From 1909, underlying the work at the Manchester Grammar School, there has been a desire to find standards by which to judge the capacity of the boys to withstand the pressure of modern school life, not only without injury, but with positive benefits. We have never abandoned the belief that mental, physical, and moral growth sprang from the same source, were mutually helpful, and were influenced widely by variation in the degree to which they were stimulated." The author has made use of a number of measurements and tests in his efforts to assess the physical resources of growing boys. Of these the more important are measurements of height, weight, chest girth, and vital capacity; to these are added measurements of the specific gravity of boys, made in a swimming bath, from which is calculated a "buoyancy index," measurements of the electrical conductivity, and moisture loss of the human skin, and the "persistence test" devised for the physical examination of air pilots. The author distinguishes three types of body shape in school-boys, which he calls the wineglass, test-tube, and barrel shape. These varieties seem to correspond closely with the athletic, asthenic, and pyknic types of Kretschmer. The types differ from each other in physical capacity and resource, in mental and also in moral qualities. Boys with the test-tube-shaped chest require more sleep than their fellows. "Moreover, since they often retain the uncontrolled and undirected emotional characteristics of childhood for a longer period than their better-balanced companions, whose total output of mental energy may be less, special consideration is demanded when they are in disgrace, and when the question of punishment arises."

The essence of Dr. Mumford's work, in which also resides the novelty of his outlook, consists in the correlation of observations upon the boys' physical, intellectual, and moral growth. This correlation demands a close coöperation between the medical officer, the masters and, in a day school, the parents, whose respective opinions and reports are collated in the author's conclusions. It will therefore be seen that the educative scope of Dr. Mumford's conceptions and methods is likely to prove widespread. Included in its orbit are not only the staff of the school and the boys that pass through it, but the boys' parents, who, in a town like Manchester, will constitute an ever-widening circle of influential people. These, in so far as they are asked to collaborate in the production of a detailed and objective assessment of the total capacities of their children, will become personally interested in the problems of health, adaptation, and growth.

This book will be read with profit by medical officers of schools and by all those interested in education. It is a valuable and important work, capable of throwing new light on the study of growing boys.

A FRENCH COURSE OF HYGIENE.

Cours d'hygiène professé à l'Institut d'Hygiène de la Faculté de Médicine de Paris. Sous la direction de LÉON BERNARD et ROBERT DEBRÉ. Paris: Masson et Cie. 1927. Illustrated. In two volumes, pp. 1247 and 811. Fr.160.

In 1905 the late Prof. Jules Courmont organised advanced instruction in public health at the Faculty of Medicine at Lyons, and in 1921 similar teaching was instituted by the medical faculty of Paris, at the same time as a Diploma of Hygiene. These two volumes represent the substance of lectures given by some 38 specialists; the names best known in this country are those of E. Brumpt (Typhus and Yellow Fevers); E. Dujardin-Beaumetz, Chef de Service à l'Institut Pasteur (Plague); R. Sabouraud (Ringworm); Henri Pottevin (International Prophylaxis and International Sanitary Conventions); E. Sacquépée, Médecin Inspecteur de l'Armée (Food Poisoning); H. Vallée, Directeur du Laboratoire de Recherches au Ministère de l'Agriculture (Anthrax); and E. Rolants, Chef de Service à l'Institut Pasteur de Lille (Sewage and Trade Wastes). We may mention that Dr. Jules Renault, Conseiller Technique Sanitaire du Ministère de l'Hygiène, deals with the Sanitary Defence of (Land) Frontiers; whilst of the two editors, Dr. Léon Bernard, who is Professeur à la Faculté de Paris, writes most of the text on Tuberculosis, and Dr. Robert Debré, Professeur agrégé in the same Faculty, is responsible for the sections on Typhoid and Paratyphoid Fevers, Measles, Scarlet Fever, Mumps and Whooping-cough, Smallpox and Vaccination, Poliomyelitis and Encephalitis, and the Prevention of Tuberculosis in Infancy.

The editors have succeeded decidedly in presenting the work in an interesting form, and have almost entirely done away with repetitions. One of the noteworthy features is the relatively large contribution made by the veterinary profession. The article on Milk is by Henri Labbé, who also writes on Flour and Bread, Beverages, and in addition, Air and Atmosphere. Wine is fully considered, and the sections on food generally are comprehensive and contain valuable instruction. Rabies is dealt with by Cruveilhier in a special chapter, whilst glanders receives attention only in the general chapter by C. Dopter, Médicin Inspecteur de l'Armée, on the Rôle of Animals in the Transmission of Disease; the eradication of tuberculosis among cattle is somewhat scantily treated. The name of Prof. Léon Bernard on the title page ensures, however, that Tuberculosis in human beings is dealt with fully, and the section on Venereal Disease is admirably written by H. Gougerot. He advocates *le consultation à deux degrés*—i.e., the hospital patient sees the general physician or surgeon and then is passed on to the venereal diseases specialist working in an adjoining room. He also insists on the value of the general adoption of a system of prematrimonial certificates of health. Prostitution and the relative advantages of its regulation and abolition are discussed at considerable length, and this whole section is worthy of close study. Present-day tendencies in France are indicated by the emphasis laid on the protection of the mother and the social hygiene of the infant, a good deal of space being given to the feeding of babies. School hygiene receives but little mention, only about 18 pages being devoted to this important subject; cancer and its prevention takes up 14 pages. On the other hand there are 280 pages on occupational hygiene, and the section by Marcel Frois on the sanitation of workshops includes a chapter on the physiology of work devoted entirely to fatigue. Occupational poisonings are dealt with by M. Duvoir, whilst E. Kohn-Abrest, Director of the Paris Laboratory of Toxicology, writes especially on the laboratory side of this subject. Until French Governments remain longer in power it is hopeless to expect much French sanitary legislation, and A. Guillon, who deals with this topic, has a somewhat difficult task. An architect, Louis Feine, writes on "the hygiene of agglomeration," and

particularly on overcrowding in towns. "Hygiene and agglomeration," he says, are words which swear at finding themselves next to one another.

In the section on sewage, the antiquated septic tank figures largely. E. Rolants writes fully on activated sludge, and includes illustrations of installations at Manchester showing air being blown into the sewage; he is able to give figures of a French installation (at Mesly) of the Sheffield type, in which the air is beaten in with paddles.

Much of the text has a general message to all sanitarians, and the book should be read with interest by public health workers in other countries besides France.

AIDS TO GYNÆCOLOGY.

Seventh edition. By RICHARD E. TOTTENHAM, B.A., M.D., D.P.H. Dub., F.R.C.P.I. London: Baillière, Tindall and Cox. 1927. Pp. 132. 3*s*.

TEACHERS are inclined to look askance at books such as this, though it cannot be questioned that there is a type of student that finds them useful in revising his work just before an examination. Books of this kind must, therefore, be judged solely as to how far they meet the needs of those for whom they cater. It goes without saying that the matter in them must be sound, even though appraised on an examination rather than a clinical valuation. Prominence should be given to general principles and details left to be filled in by what has been learnt elsewhere, and the orderly arrangement of the subject should be such as in itself to be educative. Estimated by these criteria a word of praise may be given to the general soundness of the teaching, subject as it is to a compression that allows of no latitude in description. The modern views on the physiology of menstruation are briefly set out, almost a couple of pages are devoted to Sampson's work on endometrioma and tarry ovarian cysts, and, save in some minor points, a fair summary of gynæcological practice is given. Its weakness lies rather in the faulty arrangement by which the subject is largely comprised in a series of chapters on the regional affections of the genital tract from the vulva up to the ovaries and pelvic peritoneum. The book would have been far more instructive to the student had it been arranged on a pathological basis, growths and infections, for instance, being first discussed generally as they affect the reproductive tract, and then in particular as they involve each anatomical portion. We suggest to the author at his next revision to lay-out of his subject matter on lines that would give the maximum of education to the student in the minimum of space.

DIET AND DISEASE.

By CECIL WEBB-JOHNSON, M.B., Ch.B., Major R.A.M.C. (T.F.). London: Selwyn and Blount, Ltd. 1928. Pp. 157. 3*s*. 6*d*.

Dr. Webb-Johnson takes a high hand with his professional colleagues when he states that "the average medical man is almost totally ignorant of the parts which various foods play in keeping the body sound and fit." His book is an attempt to remedy this state of affairs. Chapters are given to each of the following: dyspepsia, obesity, teeth, nerves, constipation, rheumatism, gout, neuritis, blood pressure, liver, anæmia, cancer, depression, heart, insomnia, and old age. Suitable diets are indicated and directions given as to treatment on general lines, apart from drug therapy. The chapters on constipation and obesity are perhaps the most successful of the series, the author insisting strongly on the value and use of diet in these two conditions and stating his case clearly and succinctly. His advocacy of castor oil in constipation, should an aperient become necessary, and his omission to mention the paraffin series will not meet with general approval. At times he states opinions too briefly and without sufficient qualification. The following dicta cannot be accepted as written. "If the diet . . . is strictly adhered to there is no reason why diabetes should not be completely cured, or, in the gravest cases, held in check" (p. 45); in anæmia "the treatment is almost wholly dietetic" (p. 106); "eat wisely, live cleanly—keep the bowels open in a normal manner, and the dreadful scourge of cancer will pass you by" (p. 117). Such remarks can only lead to worry for the doctor and disappointment for the patient.

The book is written throughout in a common-sense way and contains much of value. It may be useful to the busy practitioner who has to construct a diet quickly and on general lines, but the assumption that most of the teaching may be novel to doctors is unsound. The work is well printed and produced.

PERNICIOUS ANÆMIA.

By S. CORNELL, M.B. Tor., Fellow in Duke University. North Carolina: Duke University Press. 1927. Pp. 311. 20*s*.

To all those interested in pernicious anæmia Dr. Cornell's book will prove extremely useful, for it contains a bibliography dealing with over 800 references in the literature, and every chapter of his work contains full indications as to the main source of further information on the abstruser points. His book is, therefore, of primary importance as a work of reference, and it is difficult to find a single point neglected regarding pernicious anæmia. It is this very completeness in the outline that may lead the unwary to infer, on the strength of isolated description of single cases, that various writers in the early decades of the last century anticipated the discovery of Addison. It will also be found that the author has hardly given sufficient details of the actual technique of certain microscopic processes for his book to be of practical value to those actually carrying out the laboratory investigations necessary in cases of pernicious anæmia. This omission is, however, of comparatively small importance, owing to the excellence of the reference system already alluded to. The book has been published at a time when liver extracts are only just engaging general interest, and it is only on the last page of the text that reference is made to them. Their significance, however, and information contained in recent preliminary reports are sufficient to render portions of the author's last chapter already out of date, for if extracts which contain neither protein nor iron are as effective as they appear to be, the references to diets containing large quantities of "food iron" become irrelevant. In view, however, of the present concentration on the problems of pernicious anæmia, Dr. Cornell's thoroughly documented volume is welcome.

ARTIFICIAL SUNLIGHT THERAPY.

Artificial Sunlight and Its Therapeutic Uses, Fourth edition. By FRANCIS HOWARD HUMPHRIS. M.D. Brux., F.R.C.P. Edin., Hon. Consulting X Ray Physician to the American Hospital in London and to Christ's Hospital. London: Humphrey Milford, Oxford University Press. 1928. Pp. 306+xx. 10*s*. 6*d*.

THIS book has been recognised by practitioners as of practical service to them, seeing that a fourth edition appears so soon after the original publication. The use of sunlight in many pathological conditions has resulted so satisfactorily as to stimulate a great deal of research in actinotherapy, and Dr. Humphris covers the field briefly, his notes on the production and use of artificial sunlight supplying a comprehensive account of the subject. We remain a little sceptical in regard to certain theories which the author holds as accounting for the essential processes set going by ultra-violet radiation, but his work is directed to meet the clinical requirements of his

public rather than to evoke biophysical arguments; it is—in his own words—"an attempt to put in a handy form and simple language the main conclusions that have been arrived at experimentally and clinically by authoritative research workers."

The four years which have elapsed since the first issue have seen a more general employment of actinotherapy, as new purposes have been found for its use, and this popularity of the treatment has brought in its train the peril of an indiscriminate use of artificial sunlight by operators imperfectly acquainted with its properties and with the dangers that may attend clinical administration. In this edition will be found fuller details of dosage and further refinements of technique, while special attention may be called to the chapter on the red and infra-red rays. The practitioner to-day must have a basis of general knowledge of actinotherapy, and this is what Dr. Humphris's manual succeeds in supplying.

THE LAW OF MONEYLENDING.

By LINTON THORP, LL.B., and A. AIKEN WATSON. London: Effingham Wilson. 1928. Pp. 133. 4*s*. 6*d*.

THE important committee which examined the need of amending the law of moneylending a year or two ago was told by a well-known City solicitor that doctors were frequently the victims of moneylenders. If this be so, the medical profession had better inform itself of the recent changes in the law, the extended powers of reopening harsh transactions, and the increased severity of the conditions imposed upon the moneylender in the carrying on of his trade. The two statutes (of 1900 and 1927) and the rules thereunder are sensibly set out and explained in the little book opportunely presented by Messrs. Linton Thorp and Aiken Watson. Unless the reader is mathematically minded, he may, in spite of all their help, be puzzled to understand the system for calculating interest (under the Schedule to the 1927 Act) in cases where the interest charged on a loan is not expressed in terms of a rate. And no text-book can definitely explain what moneylending bargains will be deemed "harsh and unconscionable"; the cases depend upon their own particular circumstances, though the 1927 Act says that interest exceeding the rate of 48 per cent. is to be deemed excessive unless the contrary be proved. It should be added that the 1927 Act, which does so much to clip the moneylenders' claws, does not apply to Northern Ireland; it is to be hoped that the Belfast Parliament will enact similar legislation soon.

JOURNALS.

AMERICAN REVIEW OF TUBERCULOSIS.—The issue of January, 1928, contains an article by Dr. Maurice Fishberg on infraclavicular tuberculous infiltrations. In his opinion true "apical" tuberculosis is relatively a benign form of the disease, such lesions being usually limited in extent and tending to heal spontaneously. Thus a progressive involvement of the lung leading ultimately to a fatal result is rare. "These patients," he remarks, "are treated for tuberculosis very successfully; they are the preferred class of 'incipients' . . . said to be the most suitable for Sanatorium Treatment." In sharp contrast with the cases of this type are those in which the initial lesions appear in the region of the lung just below the clavicle. Here there is, as a rule, no tendency to fibrosis and limitation. In this situation exudation is followed by areas of caseous broncho-pneumonia and cavitation. Such lesions may give rise to few symptoms in their early stages, though tubercle bacilli can usually be demonstrated in the sputum. A skiagram is essential if the site of the diseased area is to be located and its extent defined. A typical skiagram reveals soft homogeneous shadows below the clavicle, and often situated in the outer zone of the lung shadow. Cavities may occur in the same area although physical signs of this condition are absent. The appearance of a heavy shadow passing horizontally outwards below the clavicle may simulate an interlobar effusion, but has a sinister significance if due to tuberculous infiltration. Severe constitutional symptoms are usually associated with this condition, and physical signs are obvious. Nearly all Dr. Fishberg's cases yielded evidence of earlier tuberculous involvement, nor does he consider that these cases should be regarded as primary infections. Whether they are the result of exogenous or endogenous reinfection is often doubtful, but the latter is in his opinion the rule. Though the prognosis of infraclavicular infiltrations is grave, involution is possible, even after cavity formation has occurred. He points out, however, that some of the soft shadows seen may be the result of perifocal inflammation around a comparatively small tuberculous lesion. In such cases resolution of a simple exudation may simulate that of tuberculous deposit.—The same issue includes articles by Drs. Kennon Dunham and A. P. Derby on the physical signs over cavity in pulmonary tuberculosis. The bronchoscopic and surgical treatment of pulmonary suppuration is discussed by Dr. Evarts Graham. A paper is contributed by Dr. H. C. Sweeny on the granules of the tubercle bacillus. As the result of experiments in the culture of tubercle bacilli under various conditions he concludes that the granules in certain stages of their life cycle may reproduce either acid-fast micro-organisms or non-acid-fast bacilli, which are actively mobile. Other granules give rise to coccoid forms, while others, after passing through a gonidiform stage, may give rise under suitable conditions to pure cultures of tubercle bacilli.

INDIAN JOURNAL OF MEDICAL RESEARCH. Vol. XV. No. 3. January, 1928.—This full number of the journal contains some 20 original contributions, many of which are continuation reports of work recorded in previous numbers. S. S. Sokhey, S. K. Gokhale, M. A. Malandkar, and H. S. Billimoria, working at the Haffkine Institute, Bombay, have investigated hepatic functions in sprue, the net result of their inquiries going to show that in this disease the liver is not enough affected to show impairment by functional tests.—R. N. Chopra and C. A. Das Gupta have found that intravenous injections of antimony compounds had a provocative action in three cases of kala-azar in which the fibrotic changes in the liver and spleen were not too advanced.—R. N. Chopra, J. C. David, and B. B. Dikshit, in a comparative study of the action of cinchona alkaloids, have shown that these derivatives exert in varying degrees a stimulating effect on the uterus of the cat.—K. C. Sen and S. K. Basu have studied the hæmolysis of red blood corpuscles by bile-salts, and the inhibiting action of normal serum and egg albumin with reference to the permeability change of the stroma.—Major J. A. Sinton continues his notes on some Indian species of the genus phlebotomus, and together with Major W. Bird and Assistant Surgeon S. N. Eate, his studies on the oral administration of quinine-stovarsol in malaria.—J. A. Manifold and A. J. De Monte contribute an important report upon dysentery and diarrhœa in Poona, which was due to a Flexner infection.—T. C. Boyd and A. C. Roy contribute notes on the cholesterol content of Indian blood in health and in leprosy.—Part XXIII. of the Revision of the Culicine Mosquitoes of India is by P. J. Barraud and, together with G. Covell, he has studied the morphology of the buccal cavity of anopheline and culicine mosquitoes.—S. D. S. Greval has compared the Kahn, Micro-kahn and Wassermann reactions in leprosy.—Asa C. Chandler has completed his studies on the prevalence and epidemiology of hookworm and other helminthic infections in India.—T. C. McCombie Young and J. D. Baily publish an extensive study of malaria in Coorg.—R. McCarrison has two articles, on lathyrism and on the experimental production of stone in the bladder respectively.—H. E. Shortt and C. S. Swaminath discuss the method of feeding of *Phlebotomus argentipes* in its bearing on the transmission of kala-azar.

THE LANCET.

LONDON: SATURDAY, APRIL 7, 1928.

EPILEPSY.

THERE seems to have been in the last few years a revival of interest in the subject of epilepsy. This is probably, to a considerable extent, due to the development of biochemistry, which has offered lines of investigation of an entirely new order, but the influence has been felt also in many methods of approach with which biochemistry is little concerned. Dr. JAMES COLLIER has given a stimulating review of the whole subject in the Lumleian lectures, of which we publish this week the concluding instalment. The first impression which his presentation conveys to the mind of the reader is that a baffling problem is presented by almost every fact associated with the disease and that on almost every point the most diverse views are held. It follows, too, as Dr. COLLIER has hinted, that there must, of necessity, be a large personal element in the conception of this disease and personal views must be reflected in any discussion of it. So far as idiopathic epilepsy is concerned, no pathological changes have been found upon which any hypothesis as to the nature of epilepsy can be built up, and attention has therefore turned to the possibility of finding an explanation of the disease in some perversion of the chemistry of life—some "metabolic dyscrasia" which may lead to the presence within the body of substances acting upon the nervous system in much the same manner as do the convulsant poisons. PAGNIEZ, MOUZON, and TURPIN found that when serum taken from epileptic patients at the time of an attack was injected into the heart or into the carotid artery of animals a series of convulsions occurred; this effect was produced only by the serum taken from the patients when an attack was about to occur, and no such effect was produced by the serum of other subjects. These experiments suggest very strongly that the determining agent for the epileptic attack is present in the blood when the attack is about to occur. Dr. COLLIER points also to certain clinical features of epilepsy as arguments in favour of a metabolic disturbance being the essential cause of the disease—its incidence in early infancy, particularly in association with rickets, its periodicity in certain cases, the way in which it is influenced by pregnancy, and, finally, the occurrence of status epilepticus. Clinically, status epilepticus is closely akin to the convulsions of uræmia and of eclampsia; furthermore, in the fatal cases, intense fatty degeneration of the cardiac muscle is found after death, and this is probably the result of an acute toxæmia. In this connexion the lecturer calls attention to a terminal epileptic coma, which is status epilepticus without the convulsions, and is comparable to uræmic coma.

Dr. COLLIER applies the hypothesis of a metabolic dyscrasia also to those cases in which convulsions occur in association with organic lesions of the brain. It is well known that only a small proportion of cases of cerebral injury or organic cerebral disease present convulsive phenomena, and the necessity of postulating a second determining factor has many times been pointed out. Other writers have supposed the second factor to be an hereditary epileptic tendency, and there is no contradiction between the two views. What is important is that the need of such a second factor should be recognised. DANDY and ELMAN, working at the Johns Hopkins Institute, found that in cats, which had a lesion of the brain, convulsions could be brought on by one-third to one-seventh of the dose of wormwood oil which was required to excite such attacks in normal animals, and also that a minimal convulsive dose produced unilateral convulsion corresponding to the side of the brain injured. These results indicate that a local lesion of the brain, not in itself epileptogenous, in conjunction with a second disturbing factor, which is also not in itself epileptogenous, can produce both local and general convulsions. Dr. COLLIER'S explanation that local cerebral disease in conjunction with a metabolic dyscrasia may account for the convulsions of organic cerebral disease is similar. His second lecture was devoted to "the borderland of epilepsy"—migraine, narcolepsy, pyknolepsy, vaso-vagal attacks, and tetany—and in seeking to bring all these paroxysmal maladies under the same heading as epilepsy Dr. COLLIER rather cuts across the recent trend in this country; but it is undoubtedly useful that their relationship to the graver symptom-complex should be kept in view. Migraine is widely regarded as dependent upon a metabolic dyscrasia. Its symptoms may be divided into two groups: (1) the hallucinations, paralyses, and abnormal mental states; and (2) the headache and vomiting. Those of the first group resemble symptoms of epilepsy, except for the facts that they last longer and are not accompanied by a convulsion, while those of the second group have their counterpart in the headache and vomiting which often follow the epileptic attack. Narcolepsy and pyknolepsy Dr. COLLIER does not admit as individual disease-entities, but considers that many cases of these groups show some typical feature which brands them as cases of epilepsy and that there is no line of demarcation. Vaso-vagal attacks, however, he regards as distinct, though belonging to the same clinical and pathological group. These attacks, of which little has been written in recent years, have the characters of a long-drawn-out petit mal attack; "the aura, the pallor, and the semi-consciousness last minutes or hours instead of fractions of a second," whereas "velocity is an essential element in the attack of ordinary epilepsy." Syncopal attacks, similarly, are not epileptic, but are to be classed in the same group, and Dr. COLLIER believes that the clinical distinctions between the syncopal and the epileptic are not absolute.

The site of origin in the nervous system and the nature of the epileptic processes receive consideration in the final lecture. The site of origin of the disturbance is definitely referred to the cerebral cortex, because it is when tumours are so situated as to affect the cortex that they are associated

with convulsions. But the view is taken that as a result of the disturbance of cortical function, positive and negative phenomena occur which have their pattern determined by the function of the lower levels of the nervous system. The most commonly occurring feature in all epileptic symptoms is loss of function—e.g., loss of consciousness, loss of speech—while the positive symptoms which occur, such as convulsive movement and sensations of vision or of taste or smell, are elementary crude phenomena which do not seem to belong to the highest levels of the nervous system. By reason of these considerations Dr. COLLIER adheres to the hypothesis of HARTENBERG that the essential element in the epileptic attack is a sudden loss of function in the higher levels of the nervous system, and that all the positive phenomena which occur have their origin in lower centres. This, of course, is very different from the orthodox teaching of "cortical excitation," from which there appears now to be a reversion, but the fact that many neurologists still hold to the traditional view shows what diversity of opinion may prevail on points that appear to be among the more soluble in this difficult disease.

WOMEN'S WORK DURING THE MENSTRUAL PERIOD.

THANKS largely to the enthusiasm and patient researches of Dr. ALICE CLOW, Prof. WINIFRED CULLIS, and other women investigators, the Victorian attitude to menstruation has gone for good. Everybody knows now that women are not necessarily "unwell" once a month, and the invasion of every kind of industry by women workers has in itself been a massive experiment proving that the period does not mean any noticeable degree of invalidism for the great majority. With the introduction of applied psychology, and the tests of accuracy and speed perfected by workers in that field, came the opportunity for unimpeachable scientific proof of the degree of disability, if any, imposed by the process of menstruation. Prof. CULLIS and Dr. CLOW[1] made inquiry into the subjective condition of their material and into certain physiological phenomena, such as the temperature and pulse-rate. Dr. HOLLINGWORTH,[2] in the United States, went further and set certain definite tests, concluding that the menstrual cycle has no effect on the mental and muscular efficiency of normal women. The criticism to be levelled against her work is that all her 23 subjects were of the same class — namely, university graduates—and only six of them were studied intensively. Moreover, they all knew the purpose of the experiments, and their natural desire to prove that their sex suffered from no disability may have called forth some unsuspected effort. Miss S. C. M. SOWTON,[3] under the supervision of Dr. C. S. MYERS, has just published the results of a careful investigation into the influence of normal menstruation in a more representative sample, including 13 university students and 16 factory operatives.

The inquiry included a simple number-checking test, a spearing test, and McDougall's dotting test. The difficulty of keeping the subject unaware of the purpose of the inquiry was ingeniously overcome by asking her to note a number of factors, such as the state of the bowels and the degree of fatigue or excitement. Among the list of 17 factors the presence or absence of the monthly period attracted no especial attention. This record also served to bring out the tremendous importance of psychological factors in improving or impairing efficiency. In fact, it was found best in the end to study each subject's performance separately and in detail. The results of the tests were carefully plotted and some of them were submitted to a thorough statistical analysis. Efficiency at the spearing test proved to be largely a matter of manual skill, and to show itself in girls who were good at games and had a lively sense of rhythm. The number-checking was more useful, calling for quickness of eye and hand combined with concentration and memory. Included in the same report is the result of an investigation by Miss E. M. BEDALE on a number of physiological conditions during the menstrual cycle, in an attempt to throw light on the vexed question of the alleged periodic rhythm of a woman's physiology. It embodies a three month's study of one woman under closely controlled conditions of diet, exercise, and daily work. In this case the subject knew the aim of the experiment, but claimed to have only an academic interest in the result, while the observer did not know it, nor did she know when the periods were on.

The results of the efficiency test laid stress on social status as an important factor. Five students and one workgirl only were uninfluenced by menstruation. Two students and two workgirls gave a better performance when menstruating than at other times; these were rather highly strung, healthy girls, and the result seems to be due to increased excitability or the liberation of reserve forces. Nine girls showed reduced efficiency during or just before the period, and when unsatisfactory cases had been excluded, the remaining five were all factory employees. No correlation was found between the subjective record of feeling fit or unfit, and the degree of efficiency revealed by the tests. It was found that the lowering of efficiency was never greater than that which might occur from other reasons between the periods. There was some indication of influence at the middle of the inter-menstrual period and still more in the pre-menstrual week. This corresponds with Miss BEDALE'S conclusion that there is a reduction of functional activity shortly before menstruation, while a general heightening occurs late in the inter-menstrual phase. Temperature, basal metabolism, vital capacity, respiration- and pulse-rates, blood pressure and capacity for work, all showed this increased activity; the records of the basal pulse-rate and basal blood pressure were, however, inconclusive. This variation is not more than 5 per cent. below and above normal, and Miss BEDALE therefore agrees with her colleagues that there is no reason to think that the fundamental physiological rhythm of a woman affects considerably or constantly the quantity or quality of her work. The combined results of the two investigations should go far to convince the public mind that menstruation has, as a rule, no noticeable effect on working capacity among normal healthy women. That there are women who find their monthly periods a more or less heavy burden no one will deny, and the individual variations are clearly shown by the report. The point for employers and doctors to remember is, that an appreciable lowering of efficiency is to be regarded not as normal and inevitable, but as pathological and calling for special consideration.

[1] Cullis, W. C.: THE LANCET, 1922, ii., 954; Clow, A. E. S.: Brit. Med. Jour., 1920, ii., 511.
[2] Hollingworth, L. S.: Functional Periodicity, N.Y. Teachers' College, Columbia University, 1914.
[3] Medical Research Council, Industrial Fatigue Research Board Report No. 45. H.M. Stationery Office.

TONSILLECTOMY AND RHEUMATISM.

IN view of the serious nature of the problem of rheumatic heart disease and its control, any study of ætiological factors or methods of prevention must evoke interest. Dr. A. D. KAISER, of Rochester, N.Y., has attempted [1] an evaluation of tonsillectomy in these conditions. Opinions as to the influence of the tonsils on various rheumatic symptoms are still conflicting, and since this is, in part, as in other problems, the direct result of paucity of data, an examination of the histories of 48,000 school-children raises a pleasant feeling of expectation. The two problems are, first, whether enucleation of the tonsils will safeguard the child against rheumatic fever, chorea, and heart disease if these infections are not already present; and, secondly, if they are or have been present, whether tonsillectomy beneficially influences the end-results or offers any assurance that recurrence can be prevented? To investigate these problems a large group of children in whom the tonsils have been removed must be subjected to a fairly long period of observation, together with a control sample of children of similar age and under similar environmental conditions. The vital statistics of the two groups, assuming the numbers to be sufficiently large, as they are in this study, will provide an answer to both propositions. It is a pity that the present study discloses no serious attempt to assess the value of the so-called control series. The author has simply taken for granted that the group is in all essential respects similar to the operated group. The only results which may be of any value seem to confuse two distinct issues. The first table in the paper gives the incidence rates of rheumatic fever, growing pains, chorea, carditis, and scarlet fever upon the two groups of children, those who had and those who had not been subjected to operation, but with no distinction as to whether these attacks occurred before or after the commencement of the inquiry. Taking the results as they stand, however, and remembering that many of the tonsillectomised children were in all probability operated on for some rheumatic condition (when, cæteris paribus, the incidence should be higher in that group than in the controls), it is of interest to note that all the above-mentioned conditions have a lower incidence in the tonsillectomised than in the non-tonsillectomised children. Even this observation, however, loses some of its importance when we examine the nature of the control series adopted. This consisted of a group of children for whom tonsillectomy was advised, but which "for various reasons was not performed." A grouping of the rheumatic manifestations, as obtained from the parents' history, shows that, in the 48,000 children, those who were operated on had an incidence rate of 8 per cent., whereas in the group in which operation was not performed the incidence was 10 per cent. There is no justification, in this or any other finding in the paper, for the statement that, "It is fair to conclude that the tonsils undoubtedly are a focus in many cases of rheumatic fever. Their removal offers considerable protection against recurrent attacks, and when the tonsils are removed before symptoms have developed, the chances for escaping rheumatic infection are appreciably increased."

In our own columns last week Dr. K. D. WILKINSON and Dr. A. G. OGILVIE gave the results of an analysis which attempts to answer the most difficult of the problems involved—namely, the effect of removal of the tonsils in the course of the disease on the end-results. Translating the findings of such a study into compact statistics involves several difficulties, mentioned (but perhaps hardly sufficiently emphasised) by the authors. In the first place, the inability to trace all patients who had come under treatment may, depending on the reasons for inability to trace, amount in certain instances to unavoidable selection, and since a large proportion of the total cases in this study could not be followed up, some weight should be given to this objection. In a comparison of two methods of treatment, for example, cases untraced owing to death are most likely to lead to biased results, since more of the patients subjected to a less efficient method will probably be lost from this cause. A definite bias, tending to produce equality in the results of treatment by two methods where no such equality exists, may thus be introduced. There is, again, the question of the adequacy of the control series. As in this study, where the problem is to determine the effect of an operative procedure (however simple) carried out while the disease is still active, it is extremely difficult to satisfy the critical of the adequacy of the series used for comparative purposes. Operation may be contra-indicated in unusually severe cases or by the appearance of complications, so that in the non-operated group remains an undue proportion of cases in which the course of the disease was of more than average severity. Even in the present series of cases this disturbing influence cannot wholly be disregarded, since it is stated that tonsillectomy is performed as early as possible "even in the presence of acute chorea or with symptoms of severe rheumatic infection, provided that signs of heart failure are absent." The group in which operation was not performed might well, therefore, form an unfair sample of the total cases. These objections may prove to be theoretical, but are worth bearing in mind when the number of cases studied is rather small. In spite of the small size of their sample, the authors' results are very definite and indicate that a significantly greater proportion of children who have suffered from rheumatic fever or chorea recover without cardiac disability when tonsillectomy has been performed. We may hope that further studies on larger numbers will be forthcoming.

[1] Amer. Med. Assoc., 1927, lxxxix., 2239.

THE annual congress of the Royal Sanitary Institute will be held at Plymouth from July 16th–21st under the presidency of Lord Astor. There will be the usual sectional meetings for the reading and discussion of papers relating to Preventive Medicine, Engineering and Architecture, Maternity and Child Welfare, including School Hygiene, Personal and Domestic Hygiene, Hygiene of Food, Hygiene in Industry, and Veterinary Hygiene. Conferences of various groups of public health officers have been planned and a popular lecture will be given by Prof. W. E. Dixon, F.R.S. During the congress a health exhibition illustrating municipal and domestic hygiene, appliances for houses and general sanitation, and the promotion of physical welfare has been arranged. A large number of delegates have already been appointed and representatives from foreign countries and parts of the British Empire will be attending. The Ministry of Health and corresponding authorities in Scotland and Ireland are ready to consider applications from local authorities for the payment of expenses of delegates, and the railway companies are issuing cheap tickets. Particulars of the programme may be had from the Secretary of the Institute at 90, Buckingham Palace-road, London, S.W.1.

Annotations.

"Ne quid nimis."

"AVIATION SICKNESS."

IN the latest instalment of little monographs on industrial hygiene from the International Labour Office (Occupation and Health Series, No. 86) is a rather alarming account of what is entitled aviation or aviators' sickness. This is a train of complex symptoms occurring in those who take the air and leading on to a state of physical and mental strain. The writer of the monograph admits, however, that the view he takes of this syndrome is not universally held, and that there are others who fail to differentiate it in any essential way from similar symptoms which may occur apart from flying. This is certainly true as regards our own Royal Air Force, for symptoms such as those described do not occur with any frequency, if at all, among its trained members. The fact is that the monograph is really a synopsis of books and reports published between 1917 and 1926, many of them at a date when selection of pilots was not so careful as it is to-day. Some of the information is misleading, as when we are informed that gastro-intestinal atony is considered a contra-indication to admission to the Royal Air Force because brusque displacements of the aeroplane are capable of inflicting injury on the abdominal organs and so giving rise to fatal syncope. The fact being that a flabby abdominal wall is unpopular in the R.A.F. because it is associated with splanchnic pooling and consequent circulatory insufficiency. We are also told that in the R.A.F. the psychomotor reactions to various stimuli are exactly determined, whereas it has been shown after careful inquiry that these reactions do not afford any real indication of fitness for piloting duties. Nor is the sense of equilibration now determined by routine turning tests, war experience having proved that the Bárány tests afford no true information as to a candidate's potential flying aptitude.

Although, therefore, the monograph cannot be taken as a guide to "aviators' sickness" in this country, nevertheless it contains points of interest to the air medical officer. Dealing with "descent sickness," it is stated "pilots may be seized with emotional disturbance from which even the strongest may not be exempt; a feeling of emptiness, thoughts and visions of death conjured up by the rapidity of the fall (60, 90, 150 km. per hour)." This is no doubt a possible experience, although it suggests unsuitable personnel; the trained airman does not suffer from a disagreeable feeling of falling the moment the aeroplane commences to point downwards. What follows may be taken as an account of imperfect adaptation. On commencing to fall, breathing stops, but then regains its rhythm, the heart quickens and palpitation increases. The aviator has a sense of constriction, sometimes slight, but capable of feeling like a burn. Hearing becomes difficult; the feelings of fullness and auricular tension reappear, followed by "buzzing salvoes or hammerings, neuralgias, tearing pains, acute pricking sensations, intolerable pains unaffected by swallowing, &c." These sensations, which last during the whole descent, seem even to become more intense after landing. Then, also, there may be incoördination with markedly uncertain movements, a whim to jump out of the machine. Marked circulatory disturbance apparently exists, with many other symptoms which diminish in the following 12 to 24 hours. It is little wonder that aviators' asthenia or sickness should supervene on these symptoms as well as psychical fatigue leading to "aviators' neurosis," which is also described in considerable detail. Various theories are held to account for this sickness—e.g., anoxæmia due to the lowered partial pressure of oxygen, acapnia from washing out of carbon dioxide, distension of intestinal gases pushing up the diaphragm and interfering with respiration. "Descent sickness" is attributed partly to tubal insufficiency causing inadequate equalisation of pressure within the middle ear and partly to abnormal excitation of the vestibular apparatus, which cause changes in the circulatory pressures. Great cold may play a part in inducing general fatigue, while cardiac fatigue may result from constant adaptation to variations of pressure. Some authorities believe that a slight renal auto-intoxication induces the first stage of sickness, which leads on to an asthenia due to renal insufficiency. In his recent series of lectures at the Royal Institution, Group-Captain Martin Flack dealt with the problems of high flying. He showed that the chief reason for the administration of oxygen to flying personnel lies in the fact that the symptoms experienced at high altitudes may in the main be attributed to oxygen-want. Diminution of atmospheric pressure per se produces no mechanical effects, since the altered pressure is transmitted equally in all directions through the semi-fluid body tissues. It has been suggested, however, that the airman may be liable to symptoms akin to those experienced by the diver or the worker in compressed air when the pressure is released too suddenly. But in the case of the airman the diminution in pressure is not yet sufficiently great or rapid to bring about any liberation of gases held in the blood plasma. By breathing oxygen from the start of the experiment, it has, in fact, been possible in a rarefaction chamber to attain a condition corresponding to an altitude of 43,800 ft. without any ill-effect whatever. Such ill-effects of diminished pressure as do occur are due to the action upon gases which are, so to speak, enclosed by the body—e.g., within the air spaces of the nose, and particularly in the Eustachian tubes. The diminution of pressure also affects the alimentary tract. Any gases present in the intestines will distend the abdomen and push up the diaphragm; but as the amount of gas is normally not large, and its expansion induces peristalsis, it is soon voided from the body. Inconveniences from this cause are rare in practice. The effect of the great cold of high altitudes is to throw added strain upon the respiratory and circulatory mechanisms as well as to induce numbness and sensations of fatigue.

Generally speaking, said Group-Captain Flack, airmen's breakdown may be classed as due to fatigue or asthenia. Flying does impose a very definite stress upon the body, especially when flights are made without the aid of oxygen for long periods at relatively high altitudes. When to this is added the stress of offensive and defensive warfare in the air, it is obvious that bodily strain or breakdown is likely to ensue if the stress be too prolonged. But the signs and symptoms of "flying strain" are varied and are such as might occur in an individual quite apart from flying. In the past war it was found that flying strain presented manifestations such as a gradual loss of power to fly high, respiratory embarrassment, palpitation of the heart, persistent headaches and lassitude, and dizziness in the air. Generally speaking, fainting in the air and syncope were rare. Mental symptoms, usually in the form of an "anxiety neurosis," might or might not be present. In many cases it was difficult to say whether breakdown was to be attributed primarily to the effects of flying or to the nervous strain of air warfare, but such symptoms were frequently found to occur in those who had taken no part in active service in the air. In the Geneva monograph statistics of accidents are given which testify to the increasing safety of flying in relation to number of miles and hours flown. The recent British record for civilian flying—namely, 60,000 passengers carried and 3,000,000 miles flown in just over two years without serious accident speaks for itself.

THE HARVEY TERCENTENARY.

THE Royal College of Physicians of London is celebrating the tercentenary of Harvey's great publication from May 14th–18th. We have already set out[1] a provisional programme of arrangements, and we are asked to make it known that the College has reserved a proportion of tickets for such Members and Licentiates of the College as may wish to be present at certain parts of the celebrations. One hundred tickets are available for the conversazione at the Hall of the Merchant Taylors Company at 9 P.M. on Tuesday, May 15th; each ticket-holder is invited to bring a lady with him. A similar reservation for Members and Licentiates, without ladies, has been made for the banquet at the Guildhall at 7 P.M. on Wednesday, May 16th. There will be an inclusive charge of 2 guineas for each dinner ticket, which should be sent as soon as the applicant receives notice that a ticket has been allotted. Some tickets will also be allotted to Members and Licentiates for the demonstrations in the Physiological Department of University College, Gower-street, on Tuesday and Wednesday mornings, 10.30 to 12.30, at which, along with demonstrations of recent additions to our knowledge of the circulation, will be shown a film specially prepared for the occasion by the College, displaying a reproduction of Harvey's original experiments. Members and Licentiates are advised to make early application, as tickets will be allotted to both London and provincial applicants as far as practicable in the order of application. Letters should be addressed to the Registrar, Royal College of Physicians, Pall Mall East, London, S.W.1.

SEASONAL VARIATIONS IN THE ANTIRACHITIC VALUE OF SUNLIGHT.

SINCE the existence of a dietetic antirachitic factor was demonstrated by Mellanby more than ten years ago the elucidation of the ætiology of rickets and of the photosynthesis of vitamin D has been the object of systematic research in all parts of the world. The rôle of sunlight in the production of vitamin D is now generally recognised, but the antirachitic value of light at different times of year and at different latitudes has only recently been studied. In an address recently delivered at Kansas City before the Inter-State Post-Graduate Medical Association, Dr. Alan Brown and Dr. F. F. Tisdall make a valuable contribution to our knowledge. After tracing briefly the steps in the investigation of the ætiology and specific cure of rickets, they emphasise the practical value of the available data, as illustrated by their own experiments on the value of sunlight in Toronto. The ultra-violet rays constitute only about 1 per cent. of the total solar radiation at the latitude of Toronto, and of these only a small band of rays (3130–2900 A.U.) are known to have antirachitic value. Since the wave-length 2900 A.U. is the shortest recorded under optimal conditions, it is obvious that for a great part of the year the antirachitic band is still further restricted; the more so as it is just this extreme region of the solar spectrum that is most readily absorbed by smoke and moisture in the atmosphere. After mentioning the important observations of Dorno on seasonal variations of sunlight in the high Alps, the authors proceed to describe their own experiments.

Rats fed on a rachitogenic diet were placed out of doors from 11 A.M. to 1 P.M. daily, control animals on the same diet being kept in the dark during the experimental period. Each week throughout the year batches of rats were started under these conditions, and after a month each batch was killed and examined for signs of rickets. The results showed that in Toronto even winter sunshine had slight antirachitic value, but from the end of February onwards this value increased sharply, corresponding with an increase in the shorter rays of the solar spectrum. It is worthy of note that the biological test bears very little relationship to meteorological records of sunshine during the corresponding periods, owing to the ease with which the effective rays are absorbed. A second series of experiments designed to test the relative values of direct sunshine and of "sky-shine" demonstrated that the scattered rays were from a half to two-thirds as effective as the direct sunshine, a point of practical importance as indicating a means of applying an efficient dose of ultra-violet rays in cases where radiant heat is undesirable. Animals exposed to light were not only protected from rickets, but also showed an increased resistance to deliberate infection, twice as many of the irradiated rats surviving an intraperitoneal injection of pathogenic bacteria as did controls kept in the dark. The intestinal contents of the irradiated rats were found to be more acid than those of the controls, indicating a better digestion in the former.

Tests carried out with various special glasses transparent to ultra-violet rays convinced the writers that for glazing ordinary windows they were of little value, owing to the small amount of sky-shine that is available. To be effective these glasses should be used in the construction of special solaria, where both direct and diffuse light can be made use of. Sunlight filtered through Corning glass, Vioray, and Vitaglass was shown to have from 25 per cent. to 50 per cent. of the antirachitic value of unfiltered sunlight. Drs. Brown and Tisdall conclude that special glass screens, of the type considered, are of value as a protection from the cold during exposure to the early spring sunshine in places with a climate like that of Toronto.

[1] THE LANCET, March 24th, 1928, p. 621.

THE G.M.C. AND INCOME-TAX.

THE claim of the General Medical Council to have its income exempted from tax, on the ground that it is a charity, has again failed. First the Special Commissioners decided against it, then Mr. Justice Rowlatt confirmed that decision last November, and now the Court of Appeal has agreed with him. The argument for the Council was briefly this: The preamble of the Medical Act says that it is expedient that persons requiring medical aid should be able to distinguish qualified from unqualified practitioners; it is the duty of the Council to keep a register of qualified practitioners and also to supervise medical studies and education as well as to edit and issue the British Pharmacopœia; these objects are of general public benefit; therefore the Council is a charity and entitled to income-tax exemption under Section 37 of the Income-Tax Act. Up to a certain point the Court of Appeal agreed. The Master of the Rolls said that the Council's objects and duties were all for the public benefit. Those objects and duties, however, are also of benefit to the medical profession. The public interest is served, but the professional interest is served also. Lord Hanworth asked himself if the Council was formed for the promotion of objects beneficial to the medical profession; he found himself obliged to answer in the affirmative and he also found himself unable to say that the Council's income was applicable, and had been applied, to charitable purposes only.

There are two previous decisions which illustrate the point. In the case of the Institute of Civil Engineers it was held that the main purpose of the body was the promotion of science. There might be some subsidiary purposes or objects, but the property of the institution, having to be applied and being applied for the purposes of the institution, was legally appropriated and applied for the promotion of science within the meaning of the income-tax law as it then stood. On the other hand, in 1886 the Society of Writers to the Signet in Scotland was held not to be exempt from tax because its objects were not substantially charitable; the body, it was said, was mainly one of several portals to a profession. Similarly the income of the Royal College of Surgeons of England was held liable to income-tax in 1899 because, though one of the objects of the Royal College was the promotion of the science of surgery, another (perhaps equally important) was the promotion of the interests of those practising

or about to practise surgery, including the examination of students and candidates for qualifications and honours. This second object was not charitable. After analysing the property of the Royal College to see how far its income could be regarded as applied to the first object only, the Court refused to exempt from tax the offices in Lincoln's Inn-fields, the examination hall, and even the libraries. It seems reasonable to say that, if the General Medical Council has been created by Parliament for the main purpose of supervising medical education and ensuring a supply of qualified practitioners, its other functions are ancillary and supplementary. But at present the law is committed to searching for signs of dualism—on the one hand the protection of the public, on the other the protection of the practitioner; while this practice prevails, it seems difficult to regard any professional organisation as, in the technical legal sense, a charity.

SILVER NITRATE IN THE EYE.

A CASE which illustrates the need for care in using silver nitrate to prevent ophthalmia is recorded by Dr. J. G. F. Heal in a recent number of the *British Journal of Ophthalmology*. As the mother was believed to have gonorrhœa, the doctor ordered nitrate of silver in a strength of 1·5 per cent. to be dropped into each eye three times a day, and at least five instillations had been done before Dr. Heal was called in. He found the child with conjunctival hæmorrhage and steamy cornea on both sides, and on one side the hæmorrhage proved so persistent that on the fourth day the infant had to be put under chloroform so that the bleeding-points could be touched with a cautery. Five weeks later the eyes were normal. As a prophylactic nitrate of silver drops should not be used in a strength greater than 1 per cent., and caution is needed where they are used more than once or twice.

KIENBOCK'S DISEASE.

Dr. F. W. Van Valkenburg,[1] who records an illustrative case, defines this condition as a chronic slowly progressive type of osteitis of the semilunar bone. The following three forms have been described by W. Müller, the classification being based on their ætiology: (1) an anatomical form due to abnormal pressure lines from anatomical abnormalities; (2) an occupational form due to repeated minimal trauma; and (3) a traumatic form due to a single violent injury. The patient's first complaint is that of a lame wrist which may or may not have been preceded by a history of trauma. The disease does not usually become well developed until after the lapse of six or eight months, when examination reveals definite tenderness over the semilunar bone, limitation of flexion, and extension of the wrist, and localisation of pain over the semilunar bone on tapping the head of the third metacarpal with the fist closed and the hand in ulnar adduction. The head of the third metacarpal will also be found to be on the same level as those of the second and fourth, whereas normally it is more prominent. X ray examination at an early stage is usually negative, but after seven to nine months the semilunar bone appears whiter and more dense, and later still shows fragmentation and atrophy. Kienbock's disease must be distinguished from tuberculosis, syphilis, and chronic arthritis of the wrist due to other causes. In the early stage conservative treatment in the form of immobilisation for one or two months with massage and electricity is indicated, but operation is required in long-standing cases and those in which conservative treatment has failed. In Dr. Van Valkenburg's case, which occurred in a man aged 39, a cabinet-maker by occupation, the condition developed without any history of injury to the wrist. The Wassermann reaction in the blood was negative. In spite of a wrist support the joint became much more painful and in the course of a few months X rays showed the typical appearances of Kienbock's disease. After the condition had lasted for six months without any improvement under conservative treatment the semilunar bone was removed under ether anæsthesia, after which steady improvement took place, the final result being that extension and flexion were approximately one-half that of the normal wrist.

[1] Minnesota Medicine, March, 1928.

A CORONER ON ANÆSTHETICS.

AT a recent inquest in the City Dr. F. J. Waldo remarked on the increasing number of cases coming before him in which death has occurred during the administration of ether, as opposed to his experience of the past in which chloroform figured much more largely in these fatalities. The first obvious fact in this connexion is, of course, that the use of ether has increased and that of chloroform has decreased enormously. Dr. Waldo cannot, we think, justly assume that the proportional death-rate of ether has risen while that of chloroform has fallen. Nor can his apparent deduction that the deaths under ether have been due to the use of an impure drug be accepted generally without fuller accounts of the cases and fuller skilled investigation of the facts. Impurity has been shown to be the probable source of the trouble in that particular kind of case characterised by convulsions, but we believe this symptom did not figure prominently in the fatalities recorded before the coroner. With Dr. Waldo's reiterated plea for research in connexion with anæsthetics and their administration we are in full accord, and we are happy to know that valuable work of the kind is going on under the joint committee set up by the Medical Research Council and the Section of Anæsthetics of the Royal Society of Medicine.

MAXIMA CHARTA.

Senator Copeland introduced into Congress last month a Bill which would give the same rights and privileges to the degree of doctor of osteopathy as to that of medicine. This information has to be set against other news from America, printed in another column, which suggests that chiropractic has suffered something of a set-back. According to the *Journal of the American Medical Association* the Copeland Bill is framed upon remarkably generous and comprehensive lines. It contains, for instance, a definition of drugless healing which is to cover "any system of healing that teaches that disease may be prevented, relieved, or cured without the use of drugs, medicine, or operative surgery." Any five or more adherents of any so-called drugless method of healing can present a petition (if the Bill should become law) demanding the appointment of an official and permanent board of examiners, and thereupon their particular cult will apparently be recognised as on an equal footing with the orthodox practice of medicine and surgery. The only limitation, we are told, upon the official recognition of any particular drugless cult is the requirement that the petitioners should somehow differentiate it from the unrestricted practice of the healing art. It is difficult to comment further upon Senator Copeland's proposals without a study of their exact text; but it is understood that they include the licensing of osteopaths to practise surgery and to prescribe drugs, the issuing of licences with reciprocal effect, and the general authorisation of diagnosis and treatment either by prayer or spiritual means, or by hygienic, dietetic, or domestic remedies without any insistence upon evidence of age, character, or professional ability. What may perhaps be described as freak legislation is by no means confined to America, but for the present the sheet-anchor of the qualified medical practitioner in this country—namely, Section 32 of the Medical Act of 1858—looks like holding fast. Statutory provisions for professional organisation are matters of slow growth among us. Midwives, nurses, and nursing homes are regulated under comparatively recent Acts of Parliament, but the Bills dealing with opticians and surveyors have made little progress and

the Bill for the professional regulation of architects (containing a discipline section which closely recalls Section 29 of the Medical Act) has been talked out in the past session to the prejudice of its prospects of becoming law. On the other hand, a Bill to tighten up the disciplinary control over the further employment of solicitors who have been struck off the rolls may perhaps make progress later in the year.

THE FOUNDLING SITE.

THE Foundling Hospital lies on a site of nine acres, surrounded by streets and squares from which its revenue is derived. Founded nearly 200 years ago by Captain Coram for the benefit of London children, it has proved a healthy home for many generations of orphans, whilst the district around has preserved a charm and beauty found in few parts of the metropolis. Its value both to mind and body is enhanced because it lies between desolate slums, and in the neighbourhood of no fewer than seven hospitals. When, therefore, in 1925 the 56 acres comprising the estate were sold to a syndicate and the Foundling institution was moved to the country, all those familiar with the district were anxious to preserve at least its open spaces. A protective association was organised and was able to secure a Parliamentary veto to a proposal to place Covent Garden market on the nine acres lying between Mecklenburg-square and Brunswick-square. When, later, the London County Council intervened and announced that it would prepare a town-planning scheme for this and neighbouring areas it was felt that the worst dangers were passed. This proved a delusion, for it is now discovered that the Council will permit the erection of a building 75 ft. high and 100 ft. deep along the Guilford-street frontage, whilst of the hinterland of eight acres nine-tenths may be covered with flats reaching a height of nearly 100 ft. It is useless regretting a misfortune of this kind without putting forward an alternative scheme for which an economic foundation can be found. Of those in the field the latest is that of Sir James Remnant, who for more than 25 years has been Member of Parliament for Holborn, one of the boroughs which stands to lose by obliteration of the Foundling site. He suggests the complete removal, to the place where Captain Coram's building now lies, of the Hospital for Sick Children, Great Ormond-street, which has been enlarged three times during the last generation and now contains 244 beds. It would be possible to sell the present site for a considerable sum, which could be devoted towards the new building, and by public subscription or otherwise some of the adjacent land could be kept as a playground for the children of the district. The price which would be asked for the nine acres is still uncertain, and the proposal will come up for reconsideration by the hospital board when further information is available. Meanwhile, it is understood, money has been promised in aid of the scheme, which has received the support of the council of the London Society and other bodies interested in maintaining open spaces. The work of the hospital is carried out in the face of serious obstacles in the present building in Great Ormond-street, the housing of patients, nurses, and residents all presenting difficulties. Thus the institution stands to gain by a change of situation, and it is believed that the board of management will wish to move to the Foundling site if the scheme is approved by King Edward's Hospital Fund for London. The Fund in its turn would be influenced in this direction if it were shown that reconstruction on the present site is impracticable. Whilst all will agree that much would be gained by transferring such important work to larger buildings in a more airy position, it must at the same time be considered whether the hospital ought really to remain in London at all. One institution at least for the treatment of acute diseases in children must remain to serve the city as a whole, but much can be said for moving all the others to the northern heights or other parts of the home counties, where the patients would enjoy an environment more healthy both from the physical and mental standpoint. The necessary consulting, distributing, and out-patient departments must remain in the centre of population, but a large proportion of cases would suffer no ill-effects by being transported in ambulances to the country. Many of the London hospitals have begun to act on this principle in a small way, and the Hospital for Sick Children has itself purchased a mansion and 75 acres of land at Tadworth in Surrey, forming a "recovery branch" with 42 beds. This was opened in June of last year. Should it be found undesirable or impossible to adopt Sir James Remnant's suggestion, and use the Foundling site for a new building, the institution might be well advised to transfer its centre of gravity to Tadworth. If no advantage is taken in this way of the Foundling site there will still remain a faint hope that it may be saved by an alternative scheme. Much support has been received for a proposal to use the building as part of a National Theatre, and if this were done by public subscription the surrounding district might become a university quarter and retain some at least of its open spaces.

CONDITIONS OF CHILDBIRTH IN INDIA.

THE difficulty of procuring accurate figures of maternal mortality in such a country as India, where neither registration of birth nor notification of death is compulsory, and where some cities attribute every death occurring within 40 days of delivery to childbirth, may be readily imagined. Dr. Margaret Balfour, lately chief medical officer of the Women's Medical Service in India, has recently carried out at the Haffkine Institute, Bombay, an investigation covering records of 11,343 cases of labour in maternity hospitals and wards in different parts of India, over a period of one year, in the hope of throwing light on the conditions of women in childbirth and on the principal causes of maternal death. Her findings were published in the *Indian Medical Gazette*, and have since been issued as a reprint. Broadly speaking, the maternal death-rate of India may be said to stand at from 10 to 15 per 1000, and in the material included in the inquiry, 31 per cent. of abnormal cases and 54 per cent. of deaths were found to be caused by diseases of pregnancy, as compared with 7 per cent. of abnormal cases and 35 per cent. of deaths among similar records taken from representative British hospitals. One of the most important causes of maternal death in India is the so-called anæmia of pregnancy, a condition almost unknown in Britain, but a terrible scourge in India and in some other tropical countries. Dr. Balfour herself followed a series of 150 cases in Bombay, and has published a separate paper dealing with this disease, which in Bombay City accounted for 61·9 per cent. of deaths reported. More than half the patients gave a history of sudden onset when previously in good health, usually between the fifth and seventh months of pregnancy. Symptoms included pyrexia, albuminuria, enlargement of the liver and spleen, œdema, vomiting, sore tongue, epistaxis, and diarrhœa. There was a high case-mortality, especially among the patients with diarrhœa; some of the non-fatal cases made a rapid recovery, while others were still in a seriously anæmic condition when they insisted on leaving hospital. In anæmia of pregnancy the fœtus does not suffer from the same blood condition as the mother, and when it dies appears to do so from lack of nourishment. Women leading confined, inactive lives, but receiving a good diet seem to be specially liable to the disease, as is evident from the high incidence among Mohammedan mothers. These women, however, show the same large proportion in regard to other diseases of pregnancy, due no doubt to the purdah system, which Dr. Balfour describes as "the custom probably most largely responsible for the disabilities of pregnancy in India." The Christian community is comparatively free from disease, for those who have had the advantage of education in mission schools have been trained in physical exercise and hygiene in a manner completely lacking from the life of the

Mohammedan and Hindu girl. Osteomalacia, or rather its consequences, figures as a serious cause of death in North India, but, curiously enough, was altogether absent from the returns of the Madras Presidency. Abnormal cases were much higher in proportion all round in the North, probably owing to the conservative views prevailing, women rarely going to a maternity hospital except for some abnormal condition. The degree of puerperal sepsis was impossible to define, as many deaths are not medically certified. The Indian woman appears to have acquired a good deal of immunity against sepsis, through generations of uncleanly practice by native midwives, doctors stating that they frequently perform such operations as version or application of forceps in conditions where anything approaching asepsis is impossible, and that the patients invariably recover without mishap. It seems much to be desired that systematic study and research into the diseases of pregnancy should be pursued in all schools of tropical medicine. Maternal deaths in India are largely due to diseases practically never seen in Britain, and, as Dr. Balfour points out, the remedy cannot be found simply by providing maternity wards or by training midwives.

MALARIA IN THE DUTCH EAST INDIES.

AN investigation of a malaria epidemic in the Dutch East Indies is reported by S. L. Brug and E. W. Walch, M.D., Dr.P.H., who have paid to England and America the delicate compliment of writing their report in English.[1] This report reveals an admirable piece of epidemiological research with some original observations on the habits of local mosquitoes. Having proved that an epidemic of some kind was in force from a rapid study of mortality statistics, the investigators incriminated malaria in acute form by finding that the parasitic index was definitely higher than the splenic index in the population. They proceeded to outline the epidemic area, first roughly from reports of the native magistrates and of local physicians, then more accurately by making blood and spleen examinations. This trail led them to the kampongs "situated immediately on the storm water canal and in the river Pepe." The former, it seems, is badly levelled, and in an unusually long dry season had been filled with stagnant pools. At the time of the investigation rains had flushed the canal and made it impossible to verify from collections of larvæ that this was indeed the source of the epidemic. But it has been noted down for future observation and sensible recommendations made. Of anopheles that are potential carriers examples were found of *rossi*, *aconitus*, *fuliginosus*, and *ludlowi*. But in the declining stage of the epidemic dissection of the anopheles was mostly negative. The writers draw attention to the fact that they caught *A. fuliginosus* "eagerly attacking people in the open at night-time."

THE PROPOSED BAYLISS-STARLING MEMORIAL

University College, London, will be for ever associated with the names of William Bayliss and Ernest Starling, who occupied chairs of physiology there during the fruitful years of a new scientific outlook. The opinion has been frequently and widely expressed that some fitting memorial should be made to record the great services rendered, both to the science of physiology and to its applications in the practical problems of medicine, by the labours of these two men. The patient zeal of the one, the fire and enthusiasm of the other, and the eagerness of both on all occasions to place their knowledge and experience at the disposal of other workers from any part of the world, have led to a universal appreciation of their services. The number of individuals in all countries who have profited directly from their help or indirectly by their influence is very great, and their writings stand as monuments to their industry and learning. A committee has now been formed to issue an appeal for funds wherewith to commemorate the connexion with physiology of these great partners in a manner of which they themselves would have approved; a material memorial or an annual lecture would have seemed a smaller thing to them than the provision of means whereby young workers of suitable training and ability might be attracted into their chosen subject. The personnel of this committee is as follows:—

Prof. J. Barcroft, F.R.S. (Cambridge), Mr. Samuel Bayliss, J.P. (Wolverhampton), Sir J. Rose Bradford, P.R.C.P., F.R.S., Prof. W. B. Cannon (Harvard), Prof. E. P. Cathcart, F.R.S. (Glasgow), Dr. H. H. Dale, Sec.R.S. (National Institute for Medical Research), Prof. J. C. Drummond (University College), Prof. C. Lovatt Evans, F.R.S. (University College), Dr. J. Fawcett (Guy's), Sir Gregory Foster (Provost, University College), Sir J. Kingston Fowler (London), Prof. A. V. Hill, F.R.S. (Foulerton Professor, Royal Society), Sir F. G. Hopkins, F.R.S. (Cambridge), Prof. J. B. Leathes, F.R.S. (Sheffield), Sir Thomas Lewis, F.R.S. (University College), Prof. Graham Lusk (Cornell), Sir Charles Martin, F.R.S. (Director, Lister Institute), Prof. M. S. Pembrey, F.R.S. (Guy's), Sir E. Sharpey-Schafer, F.R.S. (Edinburgh), Sir Charles Sherrington, F.R.S. (Oxford), Prof. G. Elliot Smith, F.R.S. (University College), Dr. Hubert Starling (Norwich), Prof. J. F. Stenning (Warden, Wadham College).

This committee is of opinion that the most fitting memorial would be the creation at University College of a Bayliss and Starling Studentship, open to any graduate in science of any university, or any graduate or undergraduate in medicine of suitable standing, to enable him to spend a year or more in such training in physiology and biochemistry as would fit him for research. A small part of the funds collected might be employed in the erection of a simple memorial tablet in the entrance hall of the Institute of Physiology. The governing body of University College has agreed to assist the appeal by remitting all fees payable by the selected candidate. Subscriptions may be sent to Prof. Lovatt Evans at the Institute of Physiology, University College, Gower-street, W.C. 1.

A BARONETCY has been conferred on Sir Richard Havelock Charles, G.C.V.O., K.C.S.I., who recently retired from the office of Serjeant-Surgeon to the King and was appointed honorary Serjeant-Surgeon.

THE following appointments have been made to His Majesty's Medical Household in Scotland: Prof. Ashley Watson Mackintosh to be honorary physician, Prof. John Marnoch and Prof. John Fraser to be honorary surgeons, and Mr. Arthur Havens Sinclair to be honorary surgeon oculist.

IN accordance with the will of the late Dr. Robert Thomas Nichols, the Royal Society of Medicine offers every three years a prize of £250 for the most valuable contribution by a British subject towards the Discovery of the Causes and Prevention of Death in Childbirth from Septicæmia. This year the prize has been equally divided between Dr. Peter L. McKinlay and Dr. Remington Hobbs.

AT the seventh International Congress of Dermatology and Syphilology, held in Rome in 1912, it was decided to hold the next congress at Copenhagen in 1915. Owing to the war this meeting was postponed indefinitely, but the Danish Dermatological Society now considers the time ripe for another international gathering, and it has decided to invite the congress to Copenhagen from August 5th to 8th, 1930. It is hoped that a large number of medical men from all countries will accept this invitation, and any suggestions for the success of the congress will be gratefully received by the Danish committee of organisation, whose secretary is Dr. S. Lomholt, Raadhusplads 45, Copenhagen.

[1] Report of an Investigation of a Malaria Epidemic in Solo, 1926, by S. L. Brug and E. W. Walch, Mededeelingen van den Dienst der Volksgezondheid in Ned.-hed. 1927. (Printed in Welterreden, Java.)

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXX.

THE TREATMENT OF OCCUPATIONAL (NON-MALIGNANT) DERMATITIS.

THOSE who are familiar with the increasing volume of literature on the subject of occupational dermatitis will realise that its treatment falls into three compartments—preventive treatment, immediate alleviation, and the treatment of sequelæ. The use of and responsibility for preventive treatment is in the hands primarily of the sufferer and to a lesser extent is divided between the Home Office, the local health authorities, and all employers of labour. The immediate treatment may be carried out by works' surgeries, by panel doctors, or by hospitals; and in the investigation and treatment of these cases every ancillary aid known to medical science may have to be invoked.

Prevention.

Some types of skin are more hazarded by occupation than others; patients whose bad circulation renders them susceptible to chilblains, the young, those who congenitally have an abnormally dry skin (xeroderma) and the rarer group of people who have hyperhidrosis of the palms, are all particularly liable to suffer from industrial dermatitis when exposed to deleterious dust or fluids. The rare type which exhibits on very slight irritation a vesicular interdigital eruption (cheiropompholyx) should above all others be excluded from occupational risks and retire to sheltered trades.

It is advantageous for employers to replace hand contact by machine labour whenever it is ascertained that bodily contact with industrial products is responsible for increasing the sickness-rate in an industry. Most notably was this done during the late war in factories where T.N.T. and poisonous gases were being made. Furthermore, a great deal of risk is eliminated by clean working; thus in such a simple occupation as machine-ruling for account books, dirty workers suffer from severe aniline dye dermatitis of the hands, whereas clean workers escape. Some, as their apprenticeship passes on, become cleanly, whilst others give up the trade. Instruction of the workers in the best method of setting about their jobs plays an essential part in the prevention of occupational dermatitis. Other protective measures include the introduction of exhaust fans and the arrangement of adequate washing facilities. Dermatitis is to be expected in bakehouses and factories where cold water is provided in the winter for washing, without soap and without towels. On the other hand, employees must be repeatedly informed that cleansing agents such as petrol, benzene, turpentine, and strong alkaline soaps are deleterious unless their use is exceptional; for dermatitis of the hands is quite often due not so much to occupation as to drastic cleansing. In some forms of work, where the hands are continually being immersed in water (fishmongers and barmaids) and in trades where there is a continual exposure to dry dust or alkalis (bakers or cement-workers), there is a constant loss of surface grease, the presence of which protects the skin and helps to keep it supple. Those exposed to such a risk often grease their skins freely every night with lanolin, lard, or similar substances, and so prevent or postpone the onset of dermatitis.

Immediate Treatment.

Treatment naturally depends on the nature of the cutaneous reaction. Should the patient show acute ulcers such as "pigeonneau"—i.e., the iris-like ulcer with central slough found in silica and arsenic workers—or the very acute ulcers found between the fingers of chrome-workers, or the large follicular pustules sometimes seen on the forearms of oil-workers, the immediate need is for frequent fomentations. Boric lint is to be avoided; plain white lint should be frequently reapplied during the day-time, and at night the limb should be powdered with pulv. zinc. oxid. et calomel. and dressed with dry gauze. In this way maceration and multiplication of the septic foci can be avoided.

More often the reaction shown consists of a red scaling eruption on the back of the forearms, extending as high as the elbow and complicated by small fissures in the webs of the fingers and on the knuckles. Here the most valuable application is the following liniment:—

℞	Calamine	35 grs.
	Solution of lime	½ oz.
	Olive oil	to 1 oz.

The best result is obtained if the patient is in bed between clean sheets with frequently changed body-linen; the cream is gently wiped on with cotton-wool three times a day and is allowed to dry without any external dressing. But if the patient returns to a home of dubious cleanliness, it is preferable to instruct him to clean the areas with a boiled bran bag and warm water twice daily, to apply the cream freely and cover the affected areas with a large dressing of white lint. The patient must be impressed with the necessity of avoiding scratching, which is liable to set up coccogenic dermatitis with the development of septic follicles or large bullæ and scabs, possibly followed by septic adenitis. It is not uncommon for the dermatitis to spread on to the forehead, face, and neck. In patients with a greasy skin, accustomed to the wearing of uncleanly thick flannel vests, dermatitis may involve the whole trunk in large red desquamating sheets with an approximation to exfoliative dermatitis at the height of the eruption.

The patient should always be removed from work at once and there should be no doubt about his certification. Responsibility for the condition of employees is apt to be disputed, and payment of sickness benefit withheld, so long as the practitioner does not clearly say whether the dermatitis is or is not occupational in origin, and it is in the patient's interest to make a plain statement on this point as soon as it is possible to do so.

In all but trivial cases the patient should be advised to go to bed. The bedrooms, as a rule, are the cleanest part of a working man's house, and in bed a man is naturally more anxious to recover than when he is wandering around his leisure haunts, an object of sympathy. It is only too common for such patients to be receiving ambulatory treatment for 18 months to two years before hospital aid is sought, and by that time the skin capillaries and nerve-endings have learned bad habits of permanent flushing and over-sensitiveness which may take much longer to undo.

Sequelæ.

The outstanding sequelæ of an attack of occupational dermatitis are dermatitis artefacta, stocking and glove erythemata, and chronic lichenisation. In young patients the return to work is often irksome and the lesson accidentally learned is utilised purposely to produce new lesions, which can only be cured by occlusive dressings. At the beginning of last year, for instance, I saw a girl with acid artefact ulcers, who in another employment at the end of the year appeared with a septic umbilicus from which I extracted two tin-tacks. In each case her motive was to leave a situation which she disliked, and she lacked courage to return home after the ordinary routine of giving notice.

The production of stocking erythemata is rather more subtle. Under this heading is comprised a group of patients who have received a definite injury of the skin which has become a site of local sepsis, and such patients present a red, scaling condition of their legs, which persists from 5 to 20 and sometimes 40 years from the date of their accident. These red legs rationalise the patient's mental conception of an anatomical leg. The eruption does not extend below the shoe level and ends in a fairly sharp line

just below the patella; that is to say, its distribution does not follow that of a vascular supply or a lymphatic tract, or the distribution of a nerve. It corresponds to that found in hysterical anæsthesia and contrasts sharply with what is seen in true neuritis. It will often be found, on close inquiry, that the original spread of the eruption was due to the employment of strong mercurial ointments. If such patients are admitted into hospital and their legs are dressed with the blandest applications and their hands are kept from all contact, the superficial inflammation will gradually subside, leaving pigmented, rather glistening dry skin of a normal pattern. In these cases great benefit is obviously obtained by the element of drama in treatment; the paint known as Sir Lenthal Cheatle's malachite green stings slightly when sprayed on the skin and leaves a vivid green colour, which is very satisfying to these self-centred people.

Among nervous patients after the general eruption has faded an irritating reddened area of skin may be left at the wrist or elbow; this by prolonged rubbing may become rough and thickened, standing out almost as a piece of shagreen leather in contrast with the normal skin. This patch of altered, but not pathological skin, is apt to be fiercely irritable at fixed times and causes great depression. In such circumstances one-third of a Sabouraud pastille dose of X rays, repeated in three weeks' time, is often magical in its effect. Continuance of irradiation is to be deprecated, although patients will press for it. Repeated exposure to X rays causes atrophy of the skin, recognisable by white scarring dappled with pigmented spots and red blotchy vessels. Such atrophic skin is fragile and vulnerable, and in later years is apt to undergo a malignant metaplasia. This sequence may be avoided by changing over to treatment by ultra-violet light, which should be administered in large doses, such as ten minutes of a Jesionek lamp exactly to the affected area at a distance of one foot; this exposure may safely be repeated after a fortnight's interval.

In all these cases no general medical counsels should be overlooked. Bad habits of constipation must be corrected and oral sepsis must be adequately treated. Malnutrition is often present owing to bad home cooking. A mixture of iron, strychnine, and arsenic should be prescribed for the pallid town-worker, while the nervous, quick, and fretful patient, more than others, should be aided by the early administration of bromides in adequate doses.

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Special Articles.

RHEUMATIC CONDITIONS IN SCHOOL-CHILDREN.

AN INVESTIGATION INTO GROWING PAINS AND NODULES (GRAINS).

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THE work here described is an endeavour to obtain definite statistical information in regard to "growing pains" and the conditions correlated with them. During the examination, in 1926 and 1927, of 1298 "routine" children over 8 years of age, in school, special attention was paid to the following points: (1) growing pains; (2) condition of teeth; (3) condition of tonsils; (4) cardiac conditions; (5) existence of nodules or grains.

Table I. gives the findings as regards growing pains:—

TABLE I.—*Semi-Urban Areas.*

Age group	8–10.	10–12.	12 upward.
Number with growing pains..	96	35	43
Number of children examined	216	88	203
Percentage with growing pains	44·4	39·8	21·2
Rural Areas.			
Number with growing pains..	160	58	87
Number of children examined	324	135	311
Percentage with growing pains	49·4	43	28·0

It would appear that "growing pains" are at their maximum from 8–10 years (unless the correct age is below this), and that there are more cases in rural than in semi-urban areas. The latter point is confirmatory of figures obtained in 1912,[1] when special attention was paid to the frequent existence of pyrexia and the heredity figure of 0·46 was obtained for "rheumatism."

Criticism is sometimes directed against the varying numbers found by different examiners to be suffering from growing pains. This condition is so lightly regarded by both parents and children that no mention of it is, as a rule, made, unless the direct question is put. Since writing these notes, I have examined 200 children in the usual way, except that in no case have I put either of the two usual questions: "Do you ever ache anywhere"; or "Do you have growing pains?" In these 200 children neither parent nor child has once mentioned growing pains, though in some cases I knew from other sources of information that they existed. To obtain accurate information the question must be put systematically to every child old enough to answer intelligently, or at least to every parent.

It is sometimes said that children answer haphazard when asked as to "growing pains," but this has not been my experience. In many cases a previous record of them existed, unknown to the child, and the answers were almost always in accord. For instance, in one school, 11 children were investigated in 1925, and again in 1926 or 1927. The children, 7 in number, who stated they had growing pains in 1925, gave the same answers, 3 in 1926, and 4 in 1927. Four children, in 1925, stated that they had not had growing pains, and of these 3 gave the same answers in 1926, and 1 stated he had had them quite recently. It is difficult to believe 11 children would remember for either one or two years the answer they had given to a question so long ago. If the growing pains were fact the answers are explained.

At the end of 1926, after the examination of 650 children, it became clear that the carious teeth were not correlated with growing pains. There were only 19 cases in which there were many carious teeth, and of these 12 were among the non-rheumatic. The teeth were good as a whole, and greatly superior to 10 years ago.

Table II. gives the percentage findings for tonsils:—

TABLE II.

—	Tonsils not visible.	Moderately enlarged.	Much enlarged.
With growing pains ..	60·2	29·1	12·6
Without growing pains..	66·7	23·6	9·7

Bearing in mind the liability of rheumatic children to tonsillitis, it becomes evident that some of them must have been seen at some stage of an attack (and, in fact, some of them are so marked), and that these would be included in those noted with "enlarged tonsils." Hence it does not appear that there is any significant difference between the rheumatic and the non-rheumatic in regard to the more chronic enlargement of tonsils.

[1] A Statistical Study of Oral Temperatures in School-children. By M. Williams, M.B., B.S., D.P.H., Julia Bell, M.A., and Karl Pearson, F.R.S.

The cardiac conditions were noted under the following headings: apex in or outside nipple line; large visible area of pulsation; bruit; thudding first sound; accentuated second sound; thrill.

Table III. gives the findings as to the existence of slight cardiac defects in children who had, or had had, growing pains, at the various ages:—

TABLE III.

Age	8–10.	10–12.	12.	13–14.
Percentage with cardiac defect	25·2	40·9	70·4	62·6

It would appear that the effect on the heart is most common at 12 years, and then begins to pass off.

It has long been known that in cases of serious rheumatic disease subcutaneous nodules are sometimes felt. An addition to our knowledge has recently been made by Dr. Vincent Coates and Dr. R. E. Thomas.[2] On a visit to Bath by the writer, Dr. Coates very kindly demonstrated tiny nodules and showed how to find them.

In the present series an attempt has been made to assess the value of these "nodules." They are to be found most easily over the ulna or over the spine. The nodules under consideration are so small that the word granule better describes them, or perhaps grain would be even more descriptive. On passing the tip of the fingers horizontally across the spine, there is a sensation as if one or more millet seeds were embedded in the subcutaneous tissue and slipped under the finger. In examining the ulnar region, the right hand must be used for the right arm and the left for the left arm. The grains are not as a rule tender. In the first 484 children examined, time only permitted the examination of the arm region. In the next 266 children both arms and spine were investigated, and this series convinced the writer that much less time and trouble is required to find the grains over the spine than those over the ulna. In the first series of 484 children Table IV. records the result:—

TABLE IV.

		Grains over ulnar.	Per-centage.
Children with growing pains ..	197	131	66·5
Children without growing pains ..	287	29	10·1

(Dr. Coates's percentage for children regarded as rheumatic was 79·5.)

The second series in which arm and spine were examined, gave results as shown in Table V.:—

TABLE V.

—	—	Grains over ulna.	Grains over spine.	Grains over both.
Children with growing pains ..	123	75 (61·0 %)	81 (66·0 %)	62 (50·4 %)
Children without growing pains ..	143	13 (9·1 %)	15 (10·5 %)	5 (3·5 %)

In the remaining 199 children the spinal area only was examined (Table VI.).

TABLE VI.

		Grains over spine.	Per-centage.
Children with growing pains ..	166	133	80·1
Children without growing pains ..	263	19	7·2

The three series of examinations all tend to show that these grains are a frequent concomitant of early rheumatism. The question that needs elucidation is whether they occur in other conditions, or whether the children who had no other sign of rheumatism at the moment are in reality already infected. In support of this view it may be mentioned that some of these cases were in children of rheumatic heredity.

Finally, I should like to draw attention to the frequency of epistaxis in rheumatic children. Definite figures cannot be given, but the frequency appears to be more than mere chance. The frequency of mild rheumatism in children suggests that a slow process of immunisation of the race is begun.

[2] Rheumatic Infection in Childhood, by Dr. Vincent Coates, Brit. Med. Jour., March 26th, 1925; and Rheumatic Infection in Childhood, by Dr. V. Coates and Dr. R. E. Thomas, THE LANCET, 1925, ii., 326.

TUBERCULOSIS CONFERENCE.

OXFORD, MARCH 29TH–31ST.

A PROVINCIAL joint meeting of the Tuberculosis Society and the Society of Superintendents of Tuberculosis Institutions was held at the Dunn Laboratory, Oxford, from March 29th to 31st.

LUPUS AND ITS TREATMENT.

At the first session, Sir FARQUHAR BUZZARD presiding, a discussion on lupus and its treatment was opened by Sir STCLAIR THOMSON (President of the Tuberculosis Society). He reminded the meeting of certain well-known features of lupus. It is a chronic tuberculous condition, liable to undergo alternate periods of activity and arrest, caused either by bovine or human bacilli, and occurring as a local manifestation, it is more common in females than in males in the proportion of 3 to 1, and commences particularly between the ages of 5 and 14. It is relatively rare in America and Canada, and in Europe is commoner in the northern parts, in cold weather than in warm, and in the poor rather than in the well-to-do.

In the upper respiratory tract lupus affects chiefly the nose, the pharynx, and the epiglottis, occasionally the larynx, and rarely the tongue or buccal mucous membrane. Lupus in the nose is often associated with lupus on the cheek, but whether the nasal lesion is always primary is a debatable point. He suggested that the nasal lesion often escapes recognition, perhaps because it may be hidden beneath the blades of the nasal speculum. He said that if adrenalin and cocaine were placed on a suspected place, the healthy mucous membrane blanches, but the lupoid area remains congested. Pharyngeal lupus is not always secondary to nasal. Lupus in the epiglottis and larynx differs markedly from tuberculosis in these situations in respect of virulence, for advanced lupoid ulceration of the epiglottis may be almost symptomless, and the same is true to a less extent of lupus in the pharynx. He described three cases to illustrate these points.

He asked if any of the audience could answer certain questions, why is lupus more common in females, why is it rare in America, why is it most common in the nose, why may pulmonary tuberculosis lead to laryngeal lupus but not to nasal? As regards treatment he relied on sanatorium principles and the proper use of the galvano-cautery. Finally, he showed several very interesting drawings of the different forms of lupus and of the results of treatment.

Dr. W. J. O'DONOVAN (London Hospital) showed a number of interesting slides illustrating a very early nodule, lupus in a mother and child, Dr. Sequeira's first natural sunlight treatment with a lens and the modern light department at the hospital, numerous cases, some of historic interest, of the results of treatment of facial lupus, lupus in operation scars, certain cases of differential diagnosis, pigmentation, and acid burns. In summarising some of the results of his experience, he emphasised the importance of general treatment which greatly enhances the value of local applications. Local treatment, he said, if drastic enough, will always get rid of lupoid patches, but some agents produce intense scarring. In his experience X ray treatment, if sufficiently thorough to cure the lupus, is always followed by carcinoma. He had found that in some cases light treatment had been unsuccessful until salvarsan had been given, even though a most careful inquiry had failed to discover

a syphilitic element. Very occasionally lupus heals spontaneously. He emphasised the necessity of coöperation with other departments, particularly those of the ophthalmologist, laryngologist, and surgeon. He concluded with a warning to search for other lupoid patches in addition to those for which the patient seeks treatment.

Discussion.

In the discussion, Dr. COFFIN agreed that in his wide experience in America lupus was very rare, and that cases of facial lupus such as Dr. O'Donovan had shown were almost unknown.—Dr. E. WARD (Devon) testified to the results obtained at the London Hospital. He asked whether Dr. O'Donovan would define lupus and explain the difference from conditions called, for instance, scrofuloderma.—Dr. E. MALLAM (Oxford) said that he had obtained good results in lupus erythematosus from the use of chrysolgan, and suggested that large doses of potassium iodide might be tried. In this connexion Dr. S. V. PEARSON (Mundesley) asked whether the claims of successful treatment of lupus erythematosus with triphal could be substantiated.—Dr. J. WATT (Godalming) said that in his sanatorium cases of tuberculosis in the mouth were very rare.—Dr. A. NIVEN ROBERTSON (Chesterfield) asked what was the origin of lupus, and whether light treatment could be used for lupus of the upper respiratory tract.

Sir STCLAIR THOMSON, in reply to the last question, said that he had failed to get good results, and that he had had no success with potassium iodide. He emphasised again the clinical differences between lupus and tuberculosis as they affect the nose, pharynx, and larynx, and gave an extremely clever imitation of the voices of four patients with cancer, syphilis, lupus, and tuberculosis, respectively, of the larynx.

Dr. O'DONOVAN said that he had not found that patients could tolerate the large doses of iodide suggested, that the pathology of lupus erythematosus was doubtful, and that there was no explanation of the reason why tuberculosis cutis should sometimes be indolent, sometimes ulcerative, sometimes liable to dissemination. The different names were due to these clinical variations.

THE POTENTIALLY TUBERCULOUS CHILD.

At the second session Sir STCLAIR THOMSON took the chair for a discussion on the potentially tuberculous child considered from the administrative point of view.

Dr. A. L. ORMEROD (M.O.H. for Oxford) said that there was no one health service responsible for the care and treatment of the potentially tuberculous child, and that in practice those who had to face the problem were forced to use or adapt such facilities as were at their disposal to meet the individual needs of different cases. Cases cannot remain on the dispensary register indefinitely as "doubtfully tuberculous," so it had been arranged in Oxford, where the medical officer of health and his assistant are clinical tuberculosis officers and school medical officers, that one weekly session should be devoted to these cases and that only the other two sessions should rank for the tuberculosis grant. At this clinic careful observation of the children is carried out, the reference of cases and their regular attendance is assured by its close connexion with the school medical service and the education authority, and the domestic environment is supervised by the medical officer of health's nurses. Any delicate child can attend the clinic. Outside assistance to the child or the family, such as the provision of extra nourishment or of clothes, can be obtained from certain public or charitable organisations. As unsatisfactory home conditions are often the main cause of the children's ill-health, and as the housing problem is no less difficult in Oxford than elsewhere, some form of residential treatment is necessary. Something has been done in this direction by boarding out children in a small house about 20 miles from the city. Only three can be accommodated at a time, so that since 1920 the total amounts only to 155, but the results have been very gratifying. In some instances the good work was undone when the child returned home, but that was inevitable. "The worst possible home condition," said Dr. Ormerod, "is an ignorant and careless mother." The evolution of this scheme, which would appear to be the best solution of the problem, makes it clear that the various public health services in a city like Oxford are inter-dependent, and the work of the medical officer of health who controls them would be much easier if a block grant were made and more freedom were allowed for its apportionment to meet varying local needs.

Dr. G. MACDONALD (Battersea) said that he was medical officer to a day school (Springwell House Open-Air School, Clapham Common), to which were admitted only notified cases of tuberculosis. They were potentially tuberculous only in the sense that many who had relatively slight degrees of glandular or surgical tuberculosis were possible cases of frank pulmonary tuberculosis later on. After tracing the history of open-air schools, and defining the four varieties, he described the routine of Springwell House. It is really a day sanatorium, accommodating 125 children, who are taught in the open air all the year round, except on some half-dozen occasions when indoor classrooms have to be used. Heliotherapy is not practised. Very special attention is given to the feeding, and periods of rest are insisted on before and after the mid-day meal and after tea. There is close coöperation with the dispensary service. In addition to the ordinary elementary education, there are vocational classes in gardening, millinery and lingerie, and a commercial class. After-care is particularly necessary for children who have attended special schools. A "school-leaving conference" is held after each term at Springwell House, and attempts are made to find suitable employment. Records of the subsequent careers of the children are kept. At the end of 1926 there was accommodation in the open-air schools of England and Wales for 5000 debilitated children, and for 500 in schools of the type of Springwell House. In London, excluding open-air classes, only one child attends an open-air school for every 500 at the elementary schools. The proportion is far too small, but it must be remembered that education in the open-air school costs three times as much, and that the selection of an open yet accessible site is difficult. The results are very satisfactory, the improvement in general health, the gain in weight, and the freedom from infectious illnesses being particularly striking.

Dr. ESTHER CARLING (Peppard) dealt with the residential open-air school. Such schools, as Sir George Newman said in his annual report for 1920, "may be provided as part of a tuberculosis scheme and utilised for children suffering from incipient tuberculosis or those in whom (owing to the presence of anæmia, malnutrition, &c.) the existence of tuberculosis is suspected. Such institutions undoubtedly serve a useful purpose in preventing the onset of definite tuberculosis." Unfortunately the attitude of the Ministry towards the potentially tuberculous child seems to have changed. Suspects cannot stay at the school for more than a few weeks unless a definite diagnosis of tuberculosis is made. Notification as tuberculous is therefore a means of ensuring prolonged treatment, but is undesirable in practice if there are still reasonable doubts about the diagnosis. Dr. Carling therefore proposed the following resolution: "This meeting desires to establish the claim of the potentially tuberculous child in rural areas to recognition as a suitable case for treatment in a county sanatorium school *without notification*." Looking back over 20 years, Dr. Carling was struck by the contrast between the procession of "lack-lustre" entrants and that of the "well-groomed" children leaving some nine months later. These children certainly needed treatment; they responded to it, but were they really tuberculous? The ideal course is to extend the

period of observation allowed so as to cover the full period of requisite treatment, but the insurmountable barrier appears to be that the treatment of tuberculosis is paid for by the Ministry of Health, and the prevention of tuberculosis in children of school age is a charge upon the school medical service. Notification of delicate children as tuberculous has several disadvantages—unreliable statistics are produced; unnecessary expense is incurred; unsuitable orientation is engendered (the hospital as against the educational outlook); the label of tuberculosis is a handicap in seeking employment later; there is possible infection from open cases; and, perhaps, there is the loss of treatment of the actual debilitating condition through misplaced measures.

Discussion.

In the ensuing general discussion, Dr. WARD said that the tuberculosis scheme was meant to deal with the definitely tuberculous patients, and the education authority with the delicate child. He drew attention to the importance of the coöperation of the general practitioner in any scheme.

Dr. W. A. DICKSON (Gloster) agreed that open-air schools were impossible in rural areas, and that residential institutions must take their place. He favoured notification in cases needing treatment, and thought that its disadvantages to the child were exaggerated.

Dr. A. NEVILLE COX (Brighton) thought that most tuberculosis officers were too busy to take charge of a comprehensive scheme for dealing with the delicate children. He asked whether such children did, in fact, become frankly tuberculous in later life.

Dr. W. STOBIE (Oxford) disliked the term "potentially tuberculous." The delicate child fell into one of four groups, the ill-nourished, the adenoid, the parasitic, and the subject of acidosis.

Dr. G. T. HEBERT (St. Thomas's) admitted that the term referred to was unsatisfactory. He would add another group to Dr. Stobie's, the child suffering from varying degrees of chronic interstitial fibrosis and pulmonary catarrh.

Dr. F. R. WALTERS (Crooksbury) said that contact did not make a child potentially tuberculous.

Dr. L. T. BURRA (Bucks) thought that the question of treatment depended largely on the question of what were the criteria for the diagnosis of tuberculosis in the child, and regretted that this subject should not have been discussed.

It was decided to defer Dr. Carling's motion until notification and the clinical diagnosis had been considered by the Society.

THE TREATMENT OF HÆMOPTYSIS.

At the third session Dr. PEARSON took the chair at a discussion on the Treatment of Hæmoptysis in Pulmonary Tuberculosis. Dr. CLIVE RIVIERE (London) said that a system of treatment depends upon a knowledge of the underlying pathological factors. Hæmpotysis is due to the rupture of vessels; diapedesis can account only for small continuous bleedings. The rupture of the vessel is due either to a local spread of disease or to congestive processes. There remain, however, several unexplained anomalies, the rarity of hæmoptysis in children, and its complete absence throughout the course of some fatal cases; and much work is still to be done on the influence of secondary organisms, particularly spirochætes. He approached the subject of treatment by following the scheme laid down by the author of a recent small text-book, and pointed out where he agreed and disagreed. The author had said there were two main objects: (1) encouragement of immediate arrest of the bleeding, and (2) prevention of its recurrence. The first was to be attained by correct posture, by avoidance of effort, by application of the ice-bag, and by removal of blood from active circulation. Dr. Riviere agreed with these measures as well as with the withholding of morphia, and hoped to hear the views of the meeting about the latter point. He agreed that spontaneous arrest often occurs. "How often," he said, "must Mother Nature have put her tongue in her cheek as she turned off the tap just as we had applied our most futile remedies." For the prevention of recurrence neither Dr. Riviere not his author places much reliance on the use of drugs. Retardation of the pulmonary blood-flow is more important than decrease of the pulmonary blood pressure, and neither vaso-constrictors nor vaso-dilators appear to have the desired effect. In fact, the flow is best controlled by physical measures. Dr. Riviere then dealt with coagulants, which can be supplied either from within or from without. Autotransfusion is a natural process after hæmoptysis, and is assisted by salt action. Coagulants from without include blood serum and the transfusion of whole blood, calcium, gelatin, coagulen-ciba, hæmoplastin, thromboplastin, and fibrinogen. Summarising, Dr. Riviere said that there were three objectives: (1) to close the bleeding vessel (by reflex action, or collapse of lung); (2) to reduce the pulmonary blood-flow (by damping down the systemic circulation); and (3) to increase the coagulating power of the blood (by salt, intramuscular calcium chloride, transfusion, &c.).

Dr. PEARSON said that in his experience as a sanatorium superintendent hæmoptysis was neither a common nor a serious occurrence. He believed that the régime tended to prevent it.

Dr. HEBERT, while recognising the great value of morphia in obstinate cases if skilfully used, thought that junior house officers should be discouraged from using it. He thought that the key to treatment lay in diagnosis of the actual cause of the bleeding. A large initial hæmoptysis was from a vein and did not need medicinal treatment; a large hæmoptysis in a chronic case often came from an artery in a cavity and called for drastic treatment; small hæmoptyses in chronic cases might be congestive (venous bleeding) and therefore need no treatment, and in active cases (arterial bleeding) the treatment varied according to circumstances.

Dr. COX advised placing the patient on the side from which the blood was coming. He drew attention to epidemics of hæmoptysis.

Dr. ROBERTSON said that he had correlated hæmoptysis with varying meteorological conditions. He drew attention to the fact that tuberculous broncho-pneumonia followed hæmoptysis in some cases, but not in others, and suggested that deficient or effective broncho-constriction was the deciding factor.

Sir STCLAIR THOMSON said that the use of morphia ought to be prohibited after laryngo-fissure. Cases of aspiration pneumonia after that operation were almost always due to its use. In cases of tuberculous laryngitis his watchword was "masterly inactivity." From what he had heard, the same appeared to apply to hæmoptysis.

Dr. W. C. FOWLER (Pinewood) asked whether any conclusions could be drawn from the occurrence of pyrexia before the hæmoptysis, or from a low grade of pyrexia after it in a previously afebrile case.

Dr. BURRA said that a very careful investigation which he had carried out had failed to reveal or suggest any connexion with meteorological conditions and the incidence of hæmoptysis.

Dr. MACDONALD asked whether hæmoptysis in the tuberculous always indicates an active process.

Dr. RIVIERE, in reply, said that he believed that hæmoptysis could occur in the absence of appreciably active tuberculosis, and that in such cases a low grade of pyrexia after the recurrence was due to the absorption of serum.

INTESTINAL TUBERCULOSIS.

At the fourth session Dr. WALTERS presided over a discussion on Intestinal Tuberculosis.

Prof. N. J. STEWART (Leeds) said that infection of the intestinal wall occurred from the lumen, from lymphatics, or from the blood stream. He did not propose to deal with the latter, which was merely part of a generalised infection, nor with cases of tabes mesenterica in which the minute path of entry in the intestinal wall had healed. Infection

from the lumen is caused by bacilli ingested with the food, but especially by bacilli contained in swallowed sputum. Thus he had found definite tuberculous enteritis in 50 per cent. of patients dying of pulmonary tuberculosis. In 85 per cent. of 500 cases investigated the lesion was in the ileo-cæcal region, it was ulcerative, obtrusively tuberculous, and rarely perforative. Adhesions were frequent, and intercommunications not uncommon. Complete healing of ulcers was rare. Infection by means of lymphatics may be responsible for the so-called hyperplastic type, which also is commonest in the ileo-cæcal region. In 18 years he had examined carefully 21 specimens of this condition, and he showed some very beautiful slides of one of these, illustrating the dilatation of the ileum, the muscular hypertrophy of its wall, the freedom from typically tuberculous ulceration (though small non-tuberculous superficial ulcers are present), and the mass of atypical tuberculous material in which tuberculous glands are often embedded. In this particular specimen a polyp apparently acted as a ball-valve to an already almost completely stenosed ileo-cæcal opening. Considering the diagnosis of the hyperplastic type, he showed a slide giving the age incidence of cancer in this situation. In 84 per cent. of cancer cases the age was over 40, and in 80 per cent. of hyperplastic tubercle was under 40. He asked for information about the radiological appearances of the condition. In conclusion, he suggested that in patients with secondary enteritis massive infection played the chief part, whereas with the hyperplastic type there was considerable local resistance.

Mr. L. E. BARRINGTON-WARD (London) said that intestinal tuberculosis could be regarded from two aspects, that of the sanatorium officer, who had to deal with it as a complication of pulmonary tuberculosis, and that of the surgeon who in his work at a general or children's hospital meets it unrelated to a lung infection. Dealing briefly with secondary enteritis, he noticed that Brown and Sampson believe it to be curable if recognised and treated in time. He considered the symptoms and diagnosis. Removal of the affected bowel is rarely feasible, but ultra-violet rays would appear to have a beneficial action. In the other type, referred to by the previous speaker, a palpable tumour is associated with the clinical features of a chronic small intestine obstruction. Exact diagnosis is usually impossible, and often is difficult even on incision of the mass removed. Resection is a satisfactory method of treatment; if that is impracticable, relief may be given by short-circuiting. Obstruction from cicatrisation of ulcers, intussusception excited by a tuberculous ulcer of the ileum, and the rare cases of perforation also concern the surgeon.

Dr. MARCUS PATERSON (Colindale) said that in adults primary tuberculous ulceration of the intestine is almost unknown. Ulceration secondary to pulmonary tuberculosis is only too common, and therapeutic measures are directed chiefly towards alleviating symptoms. In his experience, the outstanding of these had been offensive diarrhœa, associated with extreme debility and perhaps with bed-sores. In these cases an incorrect diet—namely, milk and slops—has been the cause. As soon as he put the patients on as solid a diet as possible and restricted the milk supply to a minimum, the diarrhœa almost ceased and the general nutrition improved. The widespread teaching that milk was the staple food for a patient with diarrhœa was quite fallacious. At Colindale Hospital an investigation showed that in 133 autopsies tuberculous enteritis was found in over 50, but when on a suitable diet only 3 per cent. had had diarrhœa.

Discussion.

Dr. WALTERS asked for an opinion on two points, whether the dyspepsia of early tubercle might not be caused by unrecognised intestinal disease, and what medicinal remedies were of most value in practice.

Dr. RIVIERE said that probably in certain cases tuberculous ulcers in the intestine did retrogress and heal. Being accompanied by few symptoms, their presence was difficult to diagnose. He mentioned that he had seen two cases of tuberculous ulceration in the stomach from rupture of a caseous bifurcation gland into the œsophagus. He was much interested in Prof. Stewart's suggestion of a retrograde infection of the intestine from mesenteric glands, and pointed out its analogy to retrograde involvement of the lung.

Dr. PEARSON pointed out that Dr. Walther was one of the first to draw attention to the ill-effects of milk. He regretted that no radiologist was present who could make an authoritative statement on diagnosis by the X rays.

Dr. WARD agreed that intestinal tuberculosis was commoner than was generally supposed in England, and he said that milk could be given to some cases without causing diarrhœa. He had grounds for supporting the previous speaker's suggestion that tuberculous enteritis might be associated with hyperchlorhydria.

Dr. TURNER asked whether in certain cases of appendicitis accompanied by tabes mesenterica the former might not be an atypical tuberculous condition.

Dr. H. G. TRAYER (Timperley) agreed that recognised cases of tuberculous enteritis were much less common than in America. In a series of cases of enteritis which he had investigated he found involvement of the cæcum in very few. He suggested rice water and condensed milk as a diet suitable for some cases.

In reply, Mr. BARRINGTON-WARD said that milk was quite unsuitable for patients after an intestinal operation, and Dr. PATERSON said that condensed milk might well be a suitable food for patients with tuberculous enteritis, because it did not contain the host of organisms present in raw milk.

CERTIFIED MILK.

THE production and distribution of milk are matters of the foremost importance to the nation, and certainly the medical profession does not need this information; yet it is open to question whether doctors realise what is being done throughout the country to improve our food-supply in these respects. The grades of milk licensed by the Ministry of Health are several, and as the names attached to these grades are not immediately self-explanatory, the large reforms which have taken place escape attention. The remembrance of a bad old state of affairs obscures the present and far better conditions. The risks of milk in the raw state, as an unrivalled medium for the spread of dangerous contamination, make it necessary that in outbreaks of an infectious character the medical man should inquire into the milk-supply, but the fact should not obscure the knowledge that clean milk is now being produced and placed on the market with a supervision and confidence which is largely similar to that given to water-supply in large towns. It must be admitted that it is not yet possible to ensure the supply of pure raw milk to the whole population of our large cities, so that resort is had to pasteurisation for security in dealing with large quantities from many different sources, but medical men should be aware, perhaps more generally than they are, that a diet of fresh raw milk, Certified or Grade A (tuberculin tested) milk will carry with it none of the familiar risks.

The two highest grades of milk are Certified and Grade A (tuberculin tested) which are produced at farms licensed after due inspection by the Ministry of Health from cattle that have been proved to be free from tuberculosis by the double tuberculin test performed every six months by a veterinary surgeon, either intradermally and ophthalmic, or subcutaneous and ophthalmic. The difference between these two grades of milk is that Certified is bottled on the farm directly after milking, whilst the T.T. milk is run into sterilised churns and sent to the retailer who is licensed by the local health authority to bottle it

apart from ordinary milk; or it may be sent in the sealed churns to any large institution such as a hospital or school. In Certified milk no *coli* bacilli are allowed in 1/10th c.cm. and not more than 30,000 bacteria in 1 c.cm. of milk, whilst in T.T. milk no *coli* are allowed in 1/100th c.cm., and not more than 200,000 bacteria in 1 c.cm. The lower standard of bacterial content is also allowed in the third grade of milk, the ordinary Grade A. In this grade the cattle are open to a quarterly inspection by a veterinary surgeon but are not subjected to the tuberculin test.

The production of these grades of milk is now watched over at every stage to ensure cleanliness and sterility; the cleaning and grooming of the cow receives attention as well as the sealing of the bottle that goes to the consumer. The scrubbing of the hands of operatives and the sterilisation of utensils follow the procedure of the operating theatre in large part, while milking machines are coming more and more into use—a year's experimental research with two of these machines at the National Institute for Research in Dairying at Shinfield has proved that they are capable of producing without fail month after month an exceedingly low bacterial count as long as they are properly looked afrer. With mechanical milking machines which can always be brought into a condition of proved cleanliness and with milk bottled at once with every sterile precaution, the risk of the carriage of infection should be so minimised as to be abolished, and the attitude that milk must be avoided unless sterilised or pasteurised becomes unreasoning, though the question of pasteurisation remains unanswered. Pasteurised milk, if given as a diet, must be supplemented, but to what extent this is necessary has received no final proof. There is need of disinterested experiment to arrive at the results of a fresh clean raw milk as against those of pasteurised milk—the differences observed in the health, growth, and development of the growing child should be observed far more closely than is at present the case.

At the World's Dairy Congress, to be held in the United Kingdom this summer, an opportunity should be offered for the public and the medical profession alike to became intimately acquainted with every aspect of milk production from the cow to the consumer, and it is to be hoped that at this Congress the question of testing cattle for tuberculosis will be carefully considered. In the meantime by prescribing Certified or Grade A (tuberculin tested) milk, medical men will be doing the best for their patients, while incidentally those British farmers who have gone to the length of freeing their herds of tuberculosis will be encouraged.

Public Health Services.

The Responsibility of the Part-time M.O.H. for the Diagnosis and Removal of Infectious Cases.

A week or two ago we commented upon a dispute between a rural sanitary authority and its medical officer in regard to a case of scarlet fever removed to hospital on a fellow-practitioner's notification. On the one hand, some doubt was expressed at a meeting of the Council as to the correctness of the diagnosis and as to the obligation of the medical officer of health to confirm it before the patient's removal to hospital. On the other hand, the medical officer contended that it was for the attending practitioner to make the diagnosis; in a mild attack of scarlet fever the rash might be fleeting, and it was impossible in a large rural area for the M.O.H. to see every such case the same day; moreover, he could not visit unasked, except with an entrance order. We now understand from the M.O.H. concerned that his action was fortified by two letters received from the Ministry of Health, of which the relevant portions read as follow:—

1. I am directed by the Minister of Health to state that it is not the duty of a medical officer of health in ordinary circumstances to examine patients who have been notified to him as suffering from infectious disease, though it is generally desirable in the case of small-pox or other unusual form of infection. He is required, however, to satisfy himself either directly or through a member of his staff that all proper precautions are taken to prevent the spread of the disease. Where, for the purpose of carrying out his duties under the Public Health (Pneumonia, Malaria, Dysentery, &c.) Regulations, 1919, or of advising as to measures to be taken for preventing the spread of infection or of confirming the diagnosis in special cases, a medical officer of health deems it necessary to examine a patient, the Minister considers that any such examination should, wherever practicable, be made in consultation with the patient's medical attendant.

2. I am directed by the Minister of Health to state that he considers that the responsibility for deciding whether in the interests of public health a patient should be removed to the isolation hospital rests entirely with the medical officer of health. For this purpose it is not necessary that he should visit all cases personally. The usual practice is for a visit by the sanitary inspector, who records all the particulars and forthwith reports to the medical officer of health. On this report the decision to remove or not remove the patient rests. It is, of course, desirable that the medical officer of health should be guided by the opinion of the medical practitioner in attendance as to whether the condition of the patient admits of removal.

These letters set out the position clearly enough and completely justify the action of the M.O.H. It may be added that in the particular case the diagnosis of scarlet fever was confirmed by the subsequent course.

Reports of Medical Officers of Health.

Ilford.

We have received from Dr. A. H. G. Burton the first of the health reports for the year 1927.

The Registrar-General's estimate of the population of the borough was 108,310. The birth-rate for 1927 was 15·8; the death-rate, 9·6; tuberculosis-rate, 0·65; the cancer-rate, 1·28; the death-rate from respiratory diseases and influenza was 1·6, and the rate from organic disease of the heart, 1·6. Of the death-rates calculated per 1000 births the neonatal was 19·3, the infant mortality 44, the rate from diarrhœa and enteritis under two years 4·8, and the maternal rate from childbirth 3·0.

Dr. Burton thinks that the actual population is between 120,000 and 130,000, and in support mentions that there were 61,000 persons on the voters' list in the autumn of 1927. The rapid growth of Ilford is also shown by the fact that there are 14,206 children on the school rolls, as compared with 10,981 in 1922. Owing to the prevalence of both scarlet fever and diphtheria the accommodation of the isolation hospital was strained to its utmost. Only one nurse contracted diphtheria and she had not been immunised. Immunisation has been adopted against both diphtheria and scarlet fever for the staff. The question of offering immunisation to parents for their children is under the consideration of the health committee, and Dr. Burton instances Holborn, Camberwell, Deptford, Westminster, Battersea, and Tottenham in the London district as having adopted this practice. The cubicle wards in course of completion at the hospital will increase its efficiency, but further extensions will be needed before long.

The meat regulations are being complied with by the Ilford butchers in an exemplary manner. The milk-supply is also receiving careful attention. In September a sample of tuberculous milk was obtained from a Romford retailer, who was vending milk in Ilford. The Essex county veterinary inspector reported one cow with lumps in the udder, but as the microscopical examination did not reveal tubercle no further action was taken. It was pointed out to the clerk of the Essex County Council that microscopical examination alone was unsatisfactory, and that a biological test was needed. A further Ilford sample from this cow was found to be tuberculous, but the Essex County Council had a sample examined biologically with a negative result. In reply it was

pointed out that three laboratories confirmed the fact that this herd was supplying tuberculous milk. Ultimately in December this cow was submitted to a tuberculin test, gave a positive result, and was slaughtered. It was found to be suffering from advanced tuberculosis, with lesions of both lungs, mediastinal glands, and mammary glands. Subsequently a further sample of milk from the retailer was found to be free from tuberculosis. The particulars of this case were reported to the Ministry.

An open-air school with accommodation for 100 children is nearing completion, and is to have equipment for artificial sunlight treatment. This treatment is already in operation at the isolation hospital for cases of surgical tuberculosis, and Dr. Burton reports that, although the results are good, they do not compare with the benefit obtained from natural sunlight in the summer months. The problem of the mentally defective children still remains to be dealt with in Ilford and also that of the child with minor physical defects, who requires a remedial clinic. The latter will be provided for at the new open-air school. Ilford lacks general hospital facilities. There is, however, an emergency hospital with 64 beds maintained by voluntary subscriptions and patients' fees. The governors propose to increase the number of beds and to establish an out-patients' department on modern lines. At the present time the corporation have an arrangement with Queen Mary's Hospital, Stratford, for the operative treatment of both pre-school and school-children suffering from tonsils and adenoids, and when the extensions of the Ilford Hospital are completed this work will be undertaken in the district. The new maternity home admitted 454 women as compared with 383 in 1926, and has an antenatal clinic open twice weekly. Dr. Everard Williams has been appointed consultant obstetrician. A table shows that there was 1 death from syphilis, 1 from locomotor ataxia, 34 from general paralysis of the insane, and 2 from aortic aneurysm. If all these are regarded as syphilis they make up a death-rate of 0·35 per 1000 from that cause.

There is one whole-time dentist who gives one whole morning weekly to the maternity and child welfare work, one afternoon every fortnight to tuberculosis patients, and the rest of his time to the school work. About 57 per cent. of the children inspected by him were found to need treatment, but only half accepted the treatment facilities offered.

Aberdeen.

In his report on the health of the city for the month of February Dr. J. Parlane Kinloch shows that the health department is taking active steps with regard to immunisation. Thus, during the month 18 of the hospital staff were immunised against diphtheria, 5 against scarlet fever, and 5 against both diseases. Sixty-two in-patients were immunised against diphtheria and 18 against both diseases. At the child welfare centres 106 children were immunised against diphtheria and scarlet fever—at the schools 630 and among out-patients 103. In addition 262 school-children were immunised for diphtheria alone and 127 for scarlet fever alone, while 68 out-patients were protected against diphtheria alone and 12 against scarlet fever. Eighty-seven households from which patients had been removed to the city hospital were visited and the consent of 29 susceptible contacts to immunisation was obtained. Of seven cases of dysentery notified during February six, of which four occurred in one family, were found to be due to the Flexner bacillus and one to the Sonne bacillus.

MENTAL HOSPITAL REPORTS.

Of the two Hampshire *Mental Hospitals*, that at *Knowle* is an old building where a gallant attempt is being made to carry on modern treatment. Re-decoration is gradually overtaking disrepair, and rooms are being adapted for X ray and ultra-violet apparatus. The old farm has been converted into a hospital for the treatment of general paralysis by malaria, and two verandahs have been added for recent cases. 1012 patients were on the books at the end of the year. The recovery-rate was 27·43 per cent. and the death-rate 6·87 per cent. The cause of death was verified by autopsy in 50 per cent. of the total number. There were four cases of typhoid fever during the year, but none of colitis, and the decrease in tuberculosis continued. Of the 14 paralytics treated by induced malaria, two have been discharged recovered, one died of malaria, and three died later; two were unimproved. The remaining six, though unfit for discharge, are now quiet, well-behaved, and able to do routine work Parole was introduced last year and has been extended, and there are open-door and club wards. Basket and chair work have been added to the list of occupations for patients. The farm supplies milk and vegetables, and returned a gross profit of £1500. Seven male and eight female nurses obtained their certificate.

At *Park Prewett* there were 1248 patients at the end of the year, and the records show a recovery-rate of 34·44 per cent. and a death-rate of 6·69 per cent. The general health was good, save for an outbreak of dysentery which attacked nine women. Only two patients are suffering from tuberculosis. Five villas are run on the open-door system and parole is given wherever possible within the estate, but not at present beyond its limits. The dentist visits weekly, and there is a visiting surgeon and an ophthalmologist. A separate block has been opened for private patients, and an operating theatre and bacteriological laboratory will shortly be available. The nurses' home, when open, will fulfil a long-felt want and release accommodation for patients. Eight male and seven female nurses passed their final examination during the year.

The *Wilts County Mental Hospital*, in its report for 1926–27, reports an increase of eight patients, bringing the total to 1176. The recovery-rate was 20·3 per cent. and the death-rate 8·6 per cent. All but two of those discharged had a probationary period on trial, and to 12 of these a money allowance was granted. The villas and annexe are administered on the open-door principle, and a number of patients have parole within the estate and a few outside. The cause of death was verified by autopsy in 71 per cent. of cases; the commonest cause was senility, closely followed by tuberculosis. The institution suffered from a severe epidemic of influenza, with one death, as well as 20 cases of dysentery and isolated cases of mumps, erysipelas, and diphtheria. The Commissioners urge provision of verandahs and a clinical laboratory, and the addition of butter and vegetables to the dietary, as the record of tuberculosis and dysentery is higher than in most institutions. Six female nurses work on the male side; 53 of the staff are certificated or registered. There is a distinct shortage of nurses. Out-patient clinics are conducted by the medical superintendent at the Victoria Hospital, Swindon, and the Cottage Hospital, Trowbridge; the results of the first year's working have been very encouraging.

At *Hellingly*, the *East Sussex County Mental Hospital*, there were 1192 patients at the end of the financial year; the majority of those admitted had a bad prognosis. Nine were epileptics and 10 were general paralytics sent for malarial treatment. Five of the latter showed distinct improvement. News has been received from eight of those discharged after induced malaria during 1925 and 1926. Seven were at work and doing well, though it is perhaps too early to speak of "cure." The total recovery-rate was 10·25 per cent. and the death-rate 7·6 per cent. During the year there was an epidemic of influenza, two cases of scarlet fever, and several of tonsillitis, five of measles, and some 60 instances of scabies. There were only four cases of dysentery. Sixteen operations were performed during the year, and the ophthalmic and dental surgeons have attended regularly. The former saw 271 patients, and the latter 629. Last year the hospital was badly overcrowded, but the completion of verandahs and additions to the nurses' home have remedied this.

617 patients were usefully employed, and raffia, wool-work, and rug-making have been added to the list. Considerable benefit has been derived from the Swedish drill classes for women. Many patients wear their own clothing, and the open-door system has been extended. The medical superintendent feels that the additional risk of escape is more than compensated for by the greater freedom and happiness of the patients. There have been further improvements in the dietary. The committee experience difficulty in securing enough nurses; four male and 15 female nurses passed their final examination, two of the women with distinction. The pathologist supplies an interesting report, including a full review of the malaria-treated paralytics. In addition to routine work for the hospital and county, research has been done on methods of investigation, and eight chronic cases were treated with protein therapy with one improvement.

Institutions for the Mentally Defective.

The *Lancashire and Cheshire Society for the Permanent Care of the Feeble-Minded* presents its twenty-eighth annual report for 1927. It had 325 patients in the institution at the end of the financial year, of whom 220 were adults who had been there for a long time, some of them more than 20 years. They are distributed among nine different houses. The men and boys work at farming, gardening, shoemaking, tailoring, brush and mat making, plumbing, weaving, bricksetting and house painting, and are very keen about and proud of their work. There is urgent need of a few quiet single rooms for girls who have intermittent attacks of excitement; at present such a patient simply has to be transferred. During the year "Noah's Ark," a new building for 50 patients, was completed and occupied, but involved a heavy overdraft and debt. The general health for the year was excellent, save for three mild cases of chicken-pox and a mild but prolonged epidemic of scarlet fever. There is one consumptive girl—only the third in the whole record of the home—and she is being nursed in a special little shelter in the grounds. The dietary was alterated to approximate closely to a vegetarian one, and the visiting commissioner felt anxiety about the lack of protein. The managers maintain that the reduction in meat has resulted in a great diminution in the number of common colds and bronchial affections, and that the gain in weight was adequate. The experiment appears, indeed, to be turning out satisfactorily.

The *Royal Albert Institution, Lancaster*, had 800 residents at the end of the financial year. The medical superintendent recognises that tuberculosis is the special enemy of the defective, and for this reason occupation classes are held on the verandah whenever possible, and a new verandah has been added to the girls' wing. Artificial sunlight apparatus has been installed. A new water service has been laid down, and a new sanitary block added. The usual occupations have been carried on during the year, and chair-caning classes and papier-maché moulding have been started. School gardening has been particularly successful in interesting the children. A number of the nurses have been successful at the R.M.P.A. examinations.

Both these reports are beautifully illustrated, and both institutions make an earnest appeal for funds.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 24TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 342 (last week, 359); scarlet fever, 1815; diphtheria, 1323; enteric fever, 45; pneumonia 1898; puerperal fever, 31; puerperal pyrexia, 98; cerebro-spinal fever, 12; acute poliomyelitis, 8; acute polio-encephalitis, 2; encephalitis lethargica, 36; continued fever, 1; dysentery, 6; ophthalmia neonatorum, 115. No case of cholera, plague, or typhus fever was notified during the week.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on March 27th–28th was as follows:—Small-pox, 5; scarlet fever, 1594; diphtheria, 2507; enteric fever, 32; measles, 1546; whooping-cough, 136; puerperal fever, 15 (plus 13 babies); encephalitis lethargica, 70; other diseases, 33. At St. Margaret's Hospital there were 15 cases of marasmus, and 12 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 (0) deaths from small-pox, 2 (2) from enteric fever, 166 (99) from measles, 4 (0) from scarlet fever, 51 (16) from whooping-cough, 44 (7) from diphtheria, 55 (14) from diarrhœa and enteritis under two years, and 135 (19) from influenza. The figures in parentheses are those for London itself. The 2 small-pox deaths were assigned to South Shields and Aberdare. Of the 67 fatal cases of measles outside London 9 were reported from Sheffield, 7 from West Ham, and 4 each from Willesden, East Ham, and Brighton; while the figures in Glasgow and Dublin for the same week were 16 and 7. The number of stillbirths registered during the week was 276 in the great towns, including 55 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. G. E. Hamilton is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lts. (D) to be Surg. Lieut.-Comdrs. (D): D. C. Eglington and E. C. Bevis.

Surg. Comdr. A. C. V. Green to *Danae*.

Surg. Lt.-Comdr. (D.) D. Paterson to *President*, for P.G. course.

Surg.-Lt. E. R. P. Williams to *Douglas*.

ROYAL ARMY MEDICAL CORPS.

Capt. J. A. Crawford to be Maj.

Temp. Capts. (Dental Surgs.) C. J. Pellow and H. E. Hayes (Temp. Flight Lt., R.A.F.) relinquish their commns.

Lt. J. M. Johnston resigns his commn.

ARMY RESERVE OF OFFICERS.

Maj. W. S. Crosthwait, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Capts. (Prov.) W. Simpson and G. F. Keatinge are confirmed in their rank.

Lt. F. R. Sanford to be Capt.

ROYAL AIR FORCE.

Flight Lt. G. E. Church is granted a permanent commission in this rank.

The undermentioned Temporary Lieutenants (Dental Surgeons, Gen. List) are granted temporary commissions as Flying Officers on attachment to the R.A.F. H. E. Glover and G. M. Titterington.

Flight Lt. E. Alston (temp. Capt., Dental Surgeon, Gen. List) relinquishes his temp. comm. on resignation of his Army commission.

Hospital Saving Association.—It is officially announced that £28,370 has been distributed to coöperating hospitals for the last quarter of 1927, which exceeds by £6000 the distribution for the same period of the preceding year. The Association makes annual grants also, and now that the membership exceeds 400,000 it is believed that there will be a substantial surplus for this purpose at the end of the financial year on July 31st.

Progress of Royal Northern Hospital.—At the annual Court of Governors it was stated that 5370 in-patients were treated last year, an increase of 3046 on 1914. The out-patients' attendances were more than a quarter of a million, nearly three times as many as in 1914. The Board are considering the practicability of providing a separate block of wards for middle-class patients, their experience with the existing private wards having shown them the need for self-supporting accommodation of this kind. The hospital has a debt of over £81,000.

Correspondence.

"Audi alteram partem."

ABSCESS OF THE BRAIN.

To the Editor of THE LANCET.

SIR,—Your leading article of March 10th and Mr. Miles Atkinson's letter in your issue of the 24th raise several interesting and important questions. Cerebral abscess presents itself in many forms, and any grade may be met with from an acute purulent encephalitis to a completely isolated thick-walled abscess constituting an almost solid tumour. Further, in almost any form the abscess may be complicated by extradural suppuration, sinus thrombosis, and meningitis. Few generalisations, therefore, can be made in regard to diagnosis and treatment which would be applicable to all cases. They can, it is true, be divided broadly into several groups which, however, necessarily overlap considerably, and a line of treatment suitable for one kind of case may be quite wrong when applied to a case in a different category. The great discrepancy between Macewen's results and those of all other surgeons is largely, I think, to be explained on these grounds. A perusal of Macewen's classical monograph (1893) brings out the fact that he was dealing with one particular group of cases—namely, definitely encapsulated abscesses with a long history. The average duration of the illness before operation was, in the 12 cases in which it is stated, no less than 70 days. Cases XXV. to XL., in the common situations—namely, temporal, cerebellar and frontal, were all of this kind, and of these 16 patients, 12 recovered, giving the extremely low mortality of 25 per cent. With the exception of the very long-standing, inactive, thick-walled abscess which can, and should, be shelled out whole, these 16 cases belong to the most favourable class. Further, no one, I think, who reads the detailed account of these cases can help being impressed with the meticulous personal attention to detail, characteristic of Macewen, which is evident throughout, and which doubtless contributed in no small measure to his successful results.

It would lead me too far to take up all the points raised in your leading article. Mr. Atkinson is undoubtedly right in stating that neither a rapid rise of intracranial pressure nor a rapid onset of papillœdema is characteristic of abscess formation. Headache and drowsiness (perhaps "apathy" is a better description) are the non-localising symptoms which in my experience are almost constantly and characteristically present. The most important point however, raised by Mr. Atkinson is the stage at which operation should be undertaken. I should never, myself, undertake to explore for abscess in the absence of any localising signs. I should also be very sceptical about accepting a statement that no localising signs were present in any given case. "Silent areas" are only relatively silent, and an area which has no message for one observer may be eloquent to another.

One further point relates to "hernia" of brain, which is so often confused with "fungus." The two are in reality totally distinct. Hernia cerebri means the protrusion of normal brain through an opening in the bone and dura, such as is deliberately brought about for the relief of intracranial pressure; a fungus cerebri is a protruding mass of strangulated necrotic tissue, indicative both of sepsis and of unrelieved intracranial pressure. Its appearance after the opening of an abscess is the consequence, and not the cause, of the meningitis which so often determines the fatal issue.

I am, Sir, yours faithfully,

PERCY SARGENT.

Harley-street, W., April 2nd, 1928.

WOMEN MEDICAL STUDENTS IN LONDON.

To the Editor of THE LANCET.

SIR,—Notwithstanding the action of certain medical schools in closing their doors to women it may be expected that the number of women medical students will at least be maintained. So far as it is possible to calculate on the rather inadequate data available about 100 women annually start in London the study of medicine. Of these the Royal Free Hospital can receive, I believe, between 40 and 50, while University College Hospital limits itself to 12. There will therefore probably be a balance of some 50 women to be provided for. One solution is that a new school of medicine should be founded, perhaps one which by its constitution received both women and men. If it is true that men on account of athletics or for other reasons prefer not to go to a school at which there are women provision will at least be made for those women who cannot be received at the Royal Free Hospital and who cannot because of their sex go to the other hospitals with schools. It is difficult to believe that London could not provide the clinical material and learned and skilled teachers for such a foundation. At any rate, I venture tentatively to put forward this suggestion in the hope that it may elicit support or criticism or alternative schemes. Its excuse must lie in the patent problem that in a year or two there will be a demand on the part of women medical students in London for twice as much accommodation as will be provided.

I am, Sir, yours faithfully,

E. D. MACNAMARA.

Harley-street, W., March 31st, 1928.

NASAL OBSTRUCTION AS A CAUSE OF DEAFNESS.

To the Editor of THE LANCET.

SIR,—In your very interesting and timely leading article in a recent issue (Feb. 4th, p. 241) the causes of deafness were enumerated, but one possible cause very relevant to the present issue was omitted. About the year 1900 I noticed that if I swallowed while I held my nose closed I produced both deafness and tinnitus. I concluded that a person with nasal obstruction, when swallowing, would reverse the normal process and abstract air from the tympanum. I discussed the point with the distinguished otologist to whom I send serious cases, and he agreed that at least it was possible to empty the tympanum by swallowing. I suggest that the chief object of the cavities, accessory to the tympanum, is to facilitate movements of the drum, by acting as reservoirs into and out of which air can pass from and to the very limited chamber forming the tympanum proper. The unoccupied space in the outer labyrinth, formed by these communicating chambers, is minute when compared to the extent of the lining membrane within it. Swelling or effusion from this membrane will, in addition to impairing the suppleness of the tympanic apparatus, proportionately reduce its capacity and cause the expulsion of air. The disappearance of the swelling or effusion will then produce a partial vacuum unless atmospheric pressure is restored by the normal method. Should any permanent reduction in capacity result, the effect of a subsequent attack will be thereby exaggerated. I regard this explanation as more in accord with the clinical history of the class of case I am referring to, and indeed with physical laws, than that absorption of air with the production of a minus pressure should occur, apparently at intervals.

At the time referred to, three remarkable cases convinced me that, whether my hypotheses were correct or not, nasal obstruction as a cause of deafness was frequently overlooked.

The first was a wealthy man who had consulted aurists in London, Berlin, and Vienna. He consulted me for headache, which I attributed to pressure within the nares. I removed an enlarged middle turbinal and cauterised the

mucous membrane freely. The headaches ceased ; but the point of interest is, that he told me one day, that standing by the side of an engine he had heard it letting off steam, and that previously he had been unaware that it made a noise in doing so, and he wrote to me at a later date that he was attending concerts regularly, as he found that by sitting in the front row he could follow the music.

The second case was that of a violinist, whose nose ran so that the secretion dropped on the violin as he played. Treatment involved restoring the nasal passages. He was a foreigner, young though distinguished, and one day he came into my room in a very excited state. In fact, I thought he was going to embrace me. The explanation was that he had been deaf in one ear since boyhood, which I did not know, and he found that the hearing was returning.

In the third case treatment was directed to restoration of hearing. A woman, about 50, failed to understand me, even when shouting into her ear. The deafness was comparatively recent, and was exaggerated by an illness from which she had recently recovered. She had complete nasal obstruction, and I was anxious to see the effect of its removal. She decided, before submitting to treatment, to consult a then celebrated aurist, who vetoed the treatment. A few months afterwards, however, she decided to place herself in my hands. When she did so there was no substantial change in her hearing. About six months later it had practically returned to normal, and I lost sight of her.

The fourth case I will quote is the last of a long series I have since treated. A woman, aged 52, consulted me on Sept. 21st, 1927. She could hear a loud voice at a distance of 1 foot. She informed me that she had been getting deaf for about ten years, and had been last treated two years before, and since then her hearing had remained stationary. The treatment apparently consisted of catheterisation. I found a general œdematous, almost polypoid condition of the mucous membrane. Her respiration is now perfect. She recently came to report progress, and though her hearing is not normal, she can repeat a moderate whisper at 8 feet.

In practice it is impossible to eliminate possible contributory causes. For example, I frequently cauterise the inferior turbinal to its extreme posterior end, and at a subsequent visit remove part of the fringe of mucous membrane along its lower border or its posterior end. The cauterisation renders the subsequent procedure practically bloodless. The effect is that, in addition to freer respiration, a horizontal scar is produced which may drag on the anterior wall of the tube. I also teach my patients a method of inflation which I believe obviates the risk of over-inflation in one ear. I once heard an oculist utter the dictum : " Never be the first to pass a probe down the lacrymal duct," and I have never since passed a Eustachian catheter if I could avoid it. With the patient in front of me I instruct them to raise the pressure in the post-nasal space until air enters one tympanum, but to cease all effort immediately it does so. I then get them to place the tip of the thumb on the edge of the tragus, so as to bring its margin into contact with the opposing surface, and thus close the external meatus. Slight pressure on the tragus wlll then raise the pressure on the outer side of the drum and effectively prevent the further entrance of air into the tympanum. With the inflated ear thus protected I instruct them to force air into the other ear, if possible, but to cease all effort again immediately the air is felt to enter. Preliminary nasal irrigation enables a large proportion of obstinate cases to inflate.

Obstruction is a very relative term, and patients may suffer from it at night only, though such obstruction would not per se cause deafness. Frequently when I have, from the symptoms described, diagnosed what I may term " nocturnal obstruction," patients have been previously or subsequently assured, by men whose opinions I highly respect, that no obstruction was present. It was true that they had free nasal respiration when examined, yet they snored at night, woke up with a dry mouth, often with a nasty taste, and suffered from chronic pharyngitis or laryngitis, and the improvement in general health which follows treatment resulting in the disappearance of these symptoms is very remarkable. To me it remained a very interesting enigma until attention was drawn to the ill-effects of oral sepsis. I have had many patients whose tonsils had been removed with little benefit, whereas the subsequent establishment of nocturnal nasal respiration gave the desired result. I am not questioning the removal of septic tonsils, but maintaining that this condition, or that of pyorrhœa, is frequently one focus only, though it may be the most important focus in a regional infection, the cause of which is allowed to persist. Unfortunately, the treatment may require a number of visits extending over a considerable period. Over-cauterisation or removal of tissues is so easy, whereas the provision of the minimum space required, and its provision with the minimum destruction of tissue, necessitates the careful re-examination and consideration of the case at each visit, and such intervals between the visits that the effects already obtained may be assessed. In a large practice I believe charts to be indispensable. A few strokes or curves on it necessitate accurate detailed knowledge as well as knowledge of the nares as a whole. They can be made in a few seconds at the completion of the treatment or examination, and at any subsequent visit give the surgeon *who made them* a vivid conception of the original condition and any treatment he adopted, while the result of the treatment is before him.

I may add a method I adopt to avoid injuring the bone when cauterising. It is practically invariably successful. The cautery is raised to the temperature at which it adheres to the mucous membrane, allowed to cool, and then moved to and fro. The extent of movement gives an accurate idea of the depth of tissue between it and the bone.

I am, Sir, yours faithfully,

H. MACNAUGHTON JONES.

Swiss Cottage, N.W.3., March 24th, 1928.

HYGIENE AT THE ROYAL HOSPITAL SCHOOL, GREENWICH.

To the Editor of THE LANCET.

Sir,—In answer to Dr. Percival M. May's letter of March 23rd in your issue of March 31st, may I say that the condensation of my remarks by the reporter has made the statement attributed to me stronger than it was.

As to overcrowding in the school sleeping quarters, I formed my opinion by the scale diagram on page 34 of Dr. Dudley's first report [1] showing beds within 1 ft. 9 in. of each other in batches of nine, and, though the ingenious arrangement of head and tail adopted minimised the risk to some extent, I still consider them overcrowded. In his later report [2] Dr. Dudley says the average floor space is 40 sq. ft. per bed, and the space between beds varies between 1 ft. 9 in. and 3 ft. 9 in., the average being 2 ft. This I took to mean that the bed plan shown in the first report (referred to above) was still the prevalent arrangement. If so, and indeed in any case, where beds are only 1 ft. 9 in. apart I consider there is overcrowding—not severe but quite definite. Such diverse authorities as the Royal Commission for Improving the Sanitary Condition of Barracks (1861) and the Board of Education Buildings Regulations for Secondary Schools, 1914, p. 14, both ins'st upon 3 ft. between beds, and in the first instance 60 sq. ft., and in the second 65 sq. ft. of floor space and 700 cubic ft. per occupant. Especially are these conditions necessary in dormitories such as those at Greenwich, where exceptionally large numbers of boys (70 to 126) sleep in the same dormitory.

My quotation of the attack rate of rheumatic fever at Greenwich as 6 per 1000 per annum is from Table VIII., " Relative Incidence," p. 44 of Dr. Dudley's second report, No. 111. This table gives the actual morbidity per 10,000 per annum from Greenwich as 60. No date is given, but the entry follows immediately after Shotley, 1917–24. I judged it to refer to a number of years' experience. I note elsewhere in the report it is given as 6 per 1000 in 1920 and 2 per 1000 in 1921.

[1] Medical Research Council Special Report, No. 75.
[2] Special Report, No. 111, p. 1.

I merely wish to show that I did not carelessly misquote Surgeon-Commander Dudley's work which I admire, and I should be very sorry indeed if anything I had said could be construed to mean that those responsible for the health and care of the boys were lacking in the necessary vigilance or were behind the times.

In my report on acute rheumatism I say "that probably the high rate is largely due to the care in recording those cases which being mild in character might have escaped record or been recorded as 'subacute' elsewhere."

I am, Sir, yours faithfully,

J. ALISON GLOVER.

Netherhall-gardens, N.W., April 3rd, 1928.

DISEASE IN THE WEST INDIES.

To the Editor of THE LANCET.

SIR,—During a recent visit to the West Indian Islands I had the good fortune to get into intimate touch with their educational systems, and it may interest your readers to learn that on these islands one finds no cases of rheumatic heart disease, no orthopædic trouble, and no children who are deaf and dumb. The large amount of sunshine and warmth in the West Indies may explain much of their freedom from diseases with which this country is so greatly troubled, but it will not help to explain why these diseases are on the increase with us. Were infection responsible, even in part, for the spread of rheumatic fever, one might feel justified in expecting the warmer atmosphere to be more congenial to the spread of the "specific" organism. The food of the children consists mainly of fruits, vegetables, peas and ground provisions, together with a fair quantity of milk, mainly from the goat. Fruits and vegetables are grown on a soil well supplied with lime, the islands being of coral formation, and the children as a consequence are able to obtain plenty of lime for their blood and bones.

I have long been trying to emphasise the fact that rheumatic heart disease occurs only in one type of child—namely, that which dislikes or does not obtain milk with its high lime-content, but with a perverted appetite partakes of acids in the form of vinegar, sauces or pickles. Some support is lent to my contention by the state of things to be found in the West Indies.

I am, Sir, yours faithfully,

G. ARBOUR STEPHENS.

Swansea, March 26th, 1928.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Glasgow Cancer Hospital.

AT the recent annual meeting of the Glasgow Cancer Hospital Sir George Beatson said that he knew enough of the disease to say with confidence that it began as a local malady and, if dealt with early, could be successfully removed by surgery. For practical purposes this is generally accepted and verified. But it leaves the real origin of the disease still a mystery. The hospital, said Sir George Beatson, was the only cancer research centre in Scotland, in fact the only anticancer centre in Scotland, and, if radium was found to be of use, they would like it to become the distributing centre for radium emanation. A large question is here raised. Much radium work is being done; but I gathered from a recent talk with a radiological expert that some of it is mere "pottering," just as in the case of ultra-violet. In the whole field of radiation-therapy—X ray, ultra-violet, deep-cancer therapy, radium, &c.—one variety of radiation runs into another, and the only safety is to see that any fresh developments are controlled by men skilled in the use of all forms of radiation. Otherwise we mayget X ray or radium light-heartedly applied to a suspected rodent ulcer on the temple without thought as to what may happen to the eye and its structures. And the craze for ultra-violet is crying out for some reasonable control and criticism. But all this is only another way of emphasising the great and unknown agencies it is now our privilege to have and to investigate. Everyone sympathises with Sir George Beatson's wish for more and more research.

At the same meeting Sir John Gilmour, Secretary of State for Scotland, as head of the Board of Health and responsible for the time for the direction of that department, wanted to say emphatically that, whatever advances were to be made in Government hospital policy, one fundamental thing was the voluntary principle. He hoped that there was a measure of coördination and cöoperation between the large number of hospitals in Glasgow, so that overlapping might be avoided. One knew what a tremendous strain it was upon the resources of the citizens to maintain these great institutions, and if the voluntary principle was to succeed, it could only do so if there were no overlapping and unnecessary calls upon the community.

The Friesian Cow.

In the course of the coming generation it is to be hoped that the consuming community will begin to understand the importance of milk records as a method of increasing the food-supply. For the present this seems to excite any interest only in the stock-breeders; but surely the knowledge deserves wider appreciation. For instance, the British Friesian Society state that Eldad Meilbloem, one of the British Friesian cows in the pedigree herd of the West of Scotland Agricultural College at Kilmarnock has, for the second time in her career, exceeded the 2000-gallon yield of milk within the year. This noted animal is also one of the 27 British Friesian cows to produce in one year milk containing the equivalent of 1000 lb. of butter, and when it is realised that a 2000-gallon cow must average 4·25 per cent. butter-fat over her lactation period to be regarded as a 1000-lb. butter cow, the merit of such a performance can be fully appreciated. The details of this cow's story are given and they are a marvel among lactation histories. The marvel might appeal to those pessimists who foretell the failure of food production to keep pace with population. While, under natural selection, a wild cow gives only 150 gallons a year, cows under scientific selection may give 2000 gallons, so increasing *this* food-supply more than ten times! And this is only a mere hint of what is possible in this minor section with the knowledge we already have. Yet the Kilmarnock College has, in the past, had many a difficult year to face.

Edinburgh Maternity Hospital.

Dr. Nasmyth made an admirable appeal at the annual meeting of the Simpson Memorial. In 1927 the number of deliveries in the hospital was 2094—a record. Taking the total of indoor and outdoor cases last year the gratifying fact was disclosed that 38·6 per cent., or more than one-third of the births of Greater Edinburgh, took place under the supervision of the staff. The antenatal clinics continued to grow in popularity and usefulness. In 1927 there were 10,002 visits. The postnatal clinic, now in action, attracted over 1000 visits in the first 12 months and the results had been most satisfactory. During the year 83 nurses and 287 students had been trained. Mrs. Burnett Smith (Annie S. Swan) said that the persistence of the hardy spirit of independence was proved by the pathetic readiness of the great majority of the patients to pay the modest fee asked from those who were able to pay. Dr. Haig-Ferguson emphasised another point—that their duty as directors was to provide a maternity service for the eastern counties of Scotland in an undersized, somewhat obsolete and out-of-date building, incapable of adequately overtaking its important function. Why was the hospital the same structurally as it was 50 years ago, in spite of the greater work done? It was not the fault of the directors, but it was due to the apathy of the public, who could not be raised to any enthusiasm about a maternity hospital. The public had failed to

rise to what they ought to do. This is a serious statement coming from the chairman of the Central Midwives Board for Scotland, himself one of the most distinguished in the long line of Edinburgh gynæcologists. In this special section of hospital it looks as if, for one reason or another—over-division of interests or genuine public apathy—the so-called "voluntary principle" were nearing its limit. But the movement towards effective "coöperation" among hospitals, voluntary (pay and non-pay) and official, has really begun. Edinburgh is never in a great hurry to move; but, as the recent developments at the Royal Infirmary prove, she goes far in the end, and I have no doubt of the big future of the Simpson Memorial as a factor in the larger schemes now coming to clearer definition in the administrative minds.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Recruitment of the German Army Medical Corps.

BEFORE the war the German Army Medical Corps was mainly recruited from pupils of the Army Medical College. This institution was run in connexion with the medical faculty of Berlin University, the students attending the same lectures as their civilian contemporaries and passing the same examinations, though they had to attend special classes at the College as well. Like other students, they had to serve six months as privates in order to comply with the Conscription Act. The condition of entry to the Army Medical College was that the military students who enjoyed study free of charge and received free board and lodging in the College were obliged to serve one year as medical officers with the army or navy for every term of study. When the German army was reduced under the Treaty of Versailles, the Army Medical College was abolished and the Corps has since been recruited from civilian doctors. In spite, however, of the overcrowding of the profession, only a very few medical men have applied to enter the army, so there has been some difficulty in filling vacancies. The reason for this is said to be the fact that the army authorities have imposed on applicants the condition that they should serve for six months as private soldiers in order to learn military life and exercises, a condition, of course, not very attractive to men who have already qualified as medical practitioners. The medical papers report that the Government intends to revive the former system in an altered form. It proposes that medical students should be trained at the public expense provided they accept the obligation of serving one year in the army or navy for every year of study. Their position would be that of soldiers ordered to study medicine, as was the case with the students of the former Army Medical College, who, although not wearing uniform, were always under military rule. In this manner there would be no necessity for them to do ordinary military service after qualification since they would get the required experience as young medical students. The medical journals object to this proposal. They say that as the profession is greatly overcrowded and many medical men have the greatest difficulty in earning their livelihood, the army authorities could get all the staff they require if only they would make the military career more attractive, especially by withdrawing the odious demand for ordinary military service as privates. Free study at the public expense would increase the number of medical students, and many of them, after having served the prescribed time in the army, would become civil practitioners, thereby making the position of the profession worse. As the total number of medical officers in the army is only 297 and in the navy 98 there should be no difficulty in filling the few vacancies occurring every year, even if the above stringent measures are not taken. The army authorities need do no more than apply to the Leipziger Verband, which is certainly prepared to propose an adequate number of medical candidates fit for the service in the Army Medical Corps.

Statistics of the Medical Profession.

In 1927 there were 47,338 medical men registered in Germany—i.e., 7·45 to every 10,000 of the population. This number has constantly increased, as there were 44,351 (7·10 for every 10,000) in 1926, 41,650 (6·67) in 1925, and 36,156 (5·99) in 1921. In 1913, before the war, when the territory of Germany was still greater, there were 34,136 practitioners—i.e., 5·11 for every 10,000 people, whilst the proportion worked out at 4·92 per 10,000 in 1901. There has thus been an increase of 50 per cent. or more. Eighty-four medical students matriculated for every million of the population in 1881; this number increased to 136·2 in the period 1881–1910, to 210 in 1911–14, and reached its maximum with 252 to every million in 1921. Then followed a reduction to 133 in 1925. The number of qualifications was 823 in 1910, rising to 1242 in 1913, and reaching its maximum (3882) in 1914, when medical students took a so-called emergency examination. In 1918 only 849 diplomas were granted, whilst the number increased to 3082 in 1923 and had decreased to 2004 by 1926. For every 10,000 inhabitants there are now 14·9 medical men in Berlin.

The number of women students was on an average 733 in the period 1911–14, 1538 in 1915–18, and 2077 in 1919–20; it decreased to 1304 in 1926. In 1927 there were 2078 qualified medical women, as compared with 195 in 1913. They amounted to 4·4 per cent. of the profession. Only 149 women doctors reside in places having under 5000 inhabitants and 69 of these are married to local practitioners; country practice is obviously disliked by medical women. Of the medical men 69 per cent. are general practitioners, while 31 per cent. describe themselves as specialists; the comparable figures for women are 71 and 29, so there is only a small difference between men and women in this respect.

Dr. Prinzing, of Ulm, who has recorded these figures, is of opinion that seven medical men would be sufficient for every 10,000 inhabitants, and that they would be able to earn their living. It is found impracticable to limit the number of medical students by legal action, and although an appeal to young men to abstain from medical study has met with some success it is suggested that examinations should be made more difficult, to discourage them from entering the profession.

Campaign against Malaria in Italy.

Before the Berlin Medical Society Dr. Celli-Frentzel, wife of the late Prof. Celli, of Rome, who did excellent work in combating malaria, recently read a paper on the methods and results of the Italian campaign. Formerly, she said, about 22,000 people died in Italy annually from malaria, but they had managed to reduce the death-rate to 15,000 in 1900 and to 2000 in 1914. After the war the death-rate again increased to 11,000, but it is now falling. The principal measures taken are draining of the ponds, destruction of anopheles, planting of eucalyptus, and construction of waterworks. The houses in the malarial districts are protected by wire netting and the malaria patients are isolated. Prophylactic administration of quinine on a large scale to the population, including school-children and casual labourers, is, she considers, of great importance.

A campaign against accidents has lately been carried out in Berlin under the auspices of the sick-clubs, the insurance institutions under the Workmen's Insurance Act (Berufsgenossenschaften), and the Berlin police. In 30 different places evening lectures have been delivered on avoidance of accidents in the street, in factories and at home, and on first aid. These lectures were illustrated by films and were well attended.

At the Berlin Medical Society Prof. Bruno Pribram recently demonstrated a woman who complained of a constant chirruping noise in her head. She was at first believed to suffer from hallucinations, but on

auscultation the noise was indeed detected, and was eventually traced to an aneurysm of the occipital artery. After ligature of the aneurysm the noise ceased and the patient was cured.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

"*Chiropractic is Doomed.*"

THE author of this cheering pronouncement is none other than Mr. B. J. Palmer, the head of the million dollar Palmer School of Chiropractic at Davenport, Iowa. That is if we may believe the report of his speech on Feb. 26th last at Philadelphia, published in the *Pittsburgh Medical Bulletin*. Mr. Palmer complained that his followers were practising not chiropractic, but medicine. "During the last year," he said, "I have been in every State in the Union, and this condition exists throughout. My ideals concerning chiropractic were shattered. Chiropractic is doomed." The point of his distress lies in his recognition that if other methods of healing than the magical adjustments of the spine are employed by chiropractors, then State legislators may reasonably require that chiropractors should have an elementary knowledge of the "basic sciences." Says Mr. Palmer, "I do not propose to lose my good money in fighting against sound arguments."

Invention.

An ingenious device for the localisation of metallic foreign bodies in the tissues has been reported by Dr. M. Wright, of Philadelphia. Two sterile metal filaments, separated by only a small interval at the end, are introduced through a small incision. The site of the incision is of course determined by previous X ray examination. When these two points make contact with any metallic object, an electrical circuit is completed which lights a small bulb in the handle of the instrument. The filaments are provided with a hook to remove such an object as a broken needle when localised. The instrument is illustrated in the current number of the *Journal of the American Medical Association*.

New Research Foundation.

A new research foundation, privately financed, but in charge of a committee of prominent New York physicians, has established headquarters at the New York Academy of Medicine. A series of researches into disorders of the nervous system has been planned, the first problem being a study of Encephalitis Lethargica. It is the intention of the Matheson Survey to send a trained epidemiologist to wherever a group of cases may present itself. He will coöperate with local forces in studying the ætiology of the disease.

CONTRIBUTORY SCHEMES.—The contributory scheme in aid of Worcester General Infirmary is a distinct success. The number of contributors in the city exceeds 10,000, notwithstanding that at the last census the population had not quite reached 50,000; in the county the number is 7000. The second year of the Ipswich Contributory Scheme produced in the borough £15,384, an increase of £1235. For the whole county of East Suffolk the amount raised was £26,500, an increase of £3500.—The Governors of the Kidderminster District General Hospital have decided not to establish a contributory scheme, on the ground that such funds are "a violation of the voluntary principle," that the hospitals which adopt them "offer benefits which they may find it difficult, and sometimes impossible, to provide," and that contributors who believe that they have made a contract for treatment are likely to be disillusioned.—Some of the hospitals in the neighbourhood of Birmingham are nervous about what they consider to be the "poaching" of the recently started Birmingham scheme, and the West Bromwich and District General Hospital, which is very close to Birmingham, has issued a poster warning its supporters that no advantage in the way of treatment is to be obtained by joining the scheme.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

SHOPS (HOURS OF CLOSING) BILL.

THE Shops (Hours of Closing) Bill was considered by Standing Committee A of the House of Commons on March 27th. Mr. ELLIS DAVIES presided.

On Clause 1 of the Bill, which provides for general closing hours of 8 P.M., with 9 P.M. on one day in the week, Mr. T. WILLIAMS moved an amendment to make the respective hours 7 P.M. and 8 P.M.

Sir PARK GOFF, who was in charge of the Bill, resisted the amendment.

Miss MARGARET BONDFIELD, in supporting the amendment, said that longer hours of opening produced over-fatigue, due not only to the actual work but to the hanging about which was of itself productive of very great fatigue.

Sir W. JOYNSON-HICKS (Home Secretary) said that the question under discussion went to the root of the Bill, and if the amendment was carried it would go a long way towards wrecking the measure. The Bill was a very good Bill, and he wanted to get it through with general assent.

The amendment was withdrawn.

The Supply of Articles Required in Illness.

Miss ELLEN WILKINSON moved an amendment to omit the provision permitting the supply of an article after the closing hour when reasonable grounds existed for believing that the article was required in case of illness. As the clause was drawn she thought it left the door open for a great deal of abuse of what might otherwise be quite a wise provision. The only cases which this clause might be held to cover were cases of sudden emergency, not cases of ordinary illness which were dealt with in the ordinary way. The phrase "reasonable grounds" in an Act of Parliament opened the door to all sorts of abuse, and proper administration was made very difficult. There was hardly an article in a grocer's shop that one could not say was needed in case of illness. She was perfectly willing that there should be some means of securing any kind of medicine or article really wanted in an emergency, but these, she argued, were already dealt with in paragraph 1 (*f*) of the First Schedule.

Sir PARK GOFF said the effect of this amendment would be to prevent shopkeepers supplying articles in case of illness except where those articles happened to be medicine or medical and surgical appliances. That was provided for in the First Schedule, and he did not know what had prompted this amendment. The Departmental Committee did not consider this particular point. This suggestion for articles to be supplied in the case of illness was by no means a new one, and they were only reproducing a provision in the Act of 1920. There was an entirely similar provision in Section 4, Subsection (7) of the Act of 1912, and there was no evidence whatever that any abuses had arisen in regard to the provision he had just mentioned. There might be articles which were not sold by chemists which were really necessary in cases of illness, such as ice, to be purchased from the fishmonger. It seemed desirable not only from the point of view of the public generally but from the point of view of necessitous cases and accidents that this point should be carefully considered.

Mr. MACQUISTEN said that this was a thoroughly heartless amendment. Could there be anything more cruel when somebody required in a case of illness a light meal or even a dose of some sort of medicine than to suggest that it should be possible for a person to be shut off and prevented from getting what he required?

Sir W. JOHNSON-HICKS said that he would undertake to see that it was made clear that when a shop was open for the supply of articles required in cases of illness it was not to be used for selling anything else.

The amendment was withdrawn.

Clause 1 was ordered to stand part of the Bill.

HOUSE OF LORDS.

THURSDAY, MARCH 29TH.

TETRA-ETHYL IN MOTOR SPIRIT.

Lord BUCKMASTER asked (1) what was the constitution of the committee set up to inquire into the danger arising from the use of lead tetra-ethyl in motor spirit; (2) why the committee were not sitting in public; (3) when the report was anticipated, and moved the following resolution:—

"That serious warning should at once be issued by the Minister of Health as to the possibility of danger of the use of tetra-ethyl motor spirit."

He said that he desired to recognise the wisdom and the liberality of the Ministry of Health in asking Prof. Bak

to serve upon the committee. Prof. Baker had informed him that owing to ill-health he could not sit at present, but he (Lord Buckmaster) hoped that Prof. Baker's place would be taken by a man equally distinguished and equally independent. Whatever form the committee took the public were entitled to know what the evidence was. He hoped that this inquiry would be prosecuted energetically. The matter was far too grave to allow of Government Departments reclining in Olympian ease while people might be suffering whom it was the business of those departments to protect. Although this spirit had been in use for a considerable time, and was advertised in this country more than nine months ago, no form of warning had been issued to any person who was compelled by his occupation to use it. No answer had ever been given to the grave and serious reports which he had read to the House on the last occasion from a professor of chemistry at Cambridge University, and from the President of the Chemical Society.

A Medical Man's Information.

Since that time further information had come into his hands. He had received a letter from a man who was M.D. of London University, and held the Diploma of Public Health of Cambridge. This gentleman said that he had read with interest what had taken place, and went on to say:—

"On Dec. 15th last there was submitted to me for examination parts of a car which had been run some 3000 miles on ethyl petrol obtained from garages in this country. The deposits proved to contain over 50 per cent. of soluble lead, and in view of the dangerous nature of this material I immediately communicated the fact to our Member—the Right Hon. Sir Philip Cunliffe-Lister—and, as arranged, I interviewed the petrol superintendent of the Board of Trade, and Mr. J. L. Jeffery, of that Department, came to my laboratory, examined the parts, and confirmed the chemical findings. He informed me that he would minute his report to the Home Office that same day, and suggested I should invite their representatives to do, as he had done, and 'see for themselves.' In accordance with this suggestion, I telephoned to the Home Office, and was informed by their Chief Medical Inspector of Factories that I should put my information into writing for their consideration, and further, that they could not move in the matter save only upon such written information. Astonishment was expressed at the fact that ethyl spirit was obtainable at garages."

He (Lord Buckmaster) really could not think that something that was known to the world was unknown to the very department whose business it was to control it. However, such appeared to be the case. On Dec. 22nd this confiding gentleman handed all the facts in writing to the Home Office, and received a printed acknowledgment, but had received no other communication since. Here was another man who by his position was entitled to some consideration, yet nothing had been done. This medical man had written to the *Medical Officer* on Jan. 14th of this year some information which he (Lord Buckmaster) would have thought it was the business of the Ministry of Health to know. This doctor said in the medical journal:—

"On account of the secrecy observed it is not possible to give exact figures as to the number of acute cases of industrial poisoning associated with the handling of this substance in the United States between the autumn of 1923 and the spring of 1925, but the figures available with regard to fatal cases vary from 11 to 16. About 100 non-fatal cases are also known to have occurred. Cases of serious poisoning were reported elsewhere."

This doctor also pointed out what was undoubtedly true—that one of the most terrible effects of this poison is that death is preceded by one of the most hideous forms of insanity. He believed that those figures were challenged. In the interests of science for great causes men's lives might and should be sacrificed; but not for this purpose, which was to enable somebody who normally exceeded the speed limit by 100 per cent. to exceed it by 150 per cent. without difficulty. If the Government said that this spirit was of great value in their factories for the purpose of aeroplanes he asked them whether they had warned their employees in those factories to be careful how they used this thing; that it was a substance about which scientific opinion had expressed the strongest possible views; that they must not let it touch their hands, nor must they breathe the vapour; they must take the utmost care, because if they did not they might fall upon some disaster. If it was absolutely essential that this spirit should be used by Government employees it might be that the men, properly warned, must run the risk. But for private motor-cars there was no reason whatever to justify the fact of a single man hazarding either his life or his health simply for the purpose of enabling petrol to be used which would drive a car faster than the law permitted it to go. He found in a local paper another scientific man writing a full account of this spirit and of the diseases which followed on its use. He said:—

"In the account of the four deaths by poisoning with tetra-ethyl in the United States which took place Oct. 25th-30th, 1924, it is said——"

The Marquess of SALISBURY (Lord Privy Seal) asked where these deaths occurred was it in America?

Lord BUCKMASTER: In America most undoubtedly. You have not had time to kill people here yet. The writer he was quoting went on:—

"it is said that the victims became raving madmen, much resembling those suffering from delirium tremens. In those cases, which lasted longer, there was constant excitement, with hallucinations. The sufferers imagined themselves beset with foes of every kind about to injure them, while in those who recovered loss of sleep, terrifying dreams, morning sickness, loss of appetite, headache, great weakness."

He did not want to read to their lordships the whole medical catalogue of all the sufferings which these wretched people had to undergo. It was sufficient to say that the result of this poison, if it did affect people, was something that was indisputably grave, that it was almost incapable of remedy, that it was cumulative, and that it was slow in action. Those were the very things that he would have thought they ought to have protected themselves against. He had received a communication written by a woman from New York. He could not say whether it was right or wrong, but what she said was that Dr. Harris, the Commissioner of the Board of Health of New York City, had long since forbidden the sale of this spirit in New York City, although it was allowed in New York State. Switzerland, a country which was pre-eminent throughout the whole of Europe for the high quality of its medical men, had forbidden the use and sale of this spirit throughout the whole country. Did their lordships think that was done out of spite? It had been done because their scientific knowledge informed them that its use was dangerous. He (Lord Buckmaster) had no feeling about tetra-ethyl spirit at all, but he would ask Lord Salisbury to go back into history and see whether it was the operation of industry and commerce that redeemed the factories from the disgrace of child labour, or whether it was not a great-hearted Member of their Lordships' House. Was it the tenderness of conscience of the distilleries that stopped the sale of raw spirits to the infinite degradation and demoralisation of the native races of Africa? The object of all law and of all restrictions was to bring the general standard of conduct of all the people up to the level of those of the highest principle in their class.

Appointment of a Committee.

Viscount GAGE, replying for the Ministry of Health, said that he did not anticipate being able to relieve the gloom which Lord Buckmaster felt on this matter, except that he was able on behalf of his right hon. friend to announce that, in response to the representations of the noble lord, and in conformity with the promise made by Lord Salisbury some time ago, the committee for which the noble lord pressed had been set up as follows:—

The chairman was to be Sir Frederick Wallace, Chairman of the Board of Control; the departmental representatives were: Ministry of Health, Sir George Buchanan; Home Office, Dr. Bridge, Senior Medical Inspector of Factories; Air Ministry, Mr. D. R. Pye, Deputy Director of Scientific Research; the Medical Research Council, Sir Charles Martin, Director of the Lister Institute; the Government Chemist, Sir Robert Robertson; the War Office, Major Galwey, Director of Experiments in the Chemical Warfare Department; and the Department of Scientific and Industrial Research, Dr. C. H. Lander, D.Sc., Director of Fuel Research. The non-official members were Prof. A. C. Chapman, an eminent chemist, Sir William Willcox, and Prof. W. E. Dixon. Mr. S. F. S. Hearder is to be secretary of the Committee and all communications should be addressed to him at the Ministry of Health, Whitehall, London, S.W. 1.

The terms of reference to the committee were:—

"To inquire into the possible dangers to health resulting from the use of motor spirit containing lead tetra-ethyl or similar lead-containing compounds, and to report what precautions, if any, are desirable for the protection of the public or of individuals in connexion with the use or handling of such motor spirit."

It would be seen that the committee was principally an inter-departmental one, but that it had, in addition, a number of independent experts among its members. He understood that the committee was ready to sit immediately, and in conformity with the usual practice it would be left to them to decide whether they would take evidence in public, but he was informed that there was no reason to suppose that the committee would have any objection to the noble lord's suggestion. It was impossible to give any accurate forecast of the date on which the final report would be presented. It must be evident that, having regard to the length of time occupied by the American Commission, the investigations of this committee, if they were to have any value, must be very extensive and prolonged. As to any interim action by the Ministry, it must be evident that the marketing of oil fuel was a competitive business, and obviously it would be a very strong measure for the Government to take if they were to prejudice the products of a particular firm by such an official warning as Lord

Buckmaster suggested unless they had the very strongest reason for doing so. He would point out that when tetra-ethyl spirit was first introduced in America some five years ago it resulted in an agitation there of considerably greater dimensions than the agitation had reached in this country, so much so that the firm which introduced the spirit voluntarily suspended the sale of it until inquiry had been made. There had been three inquiries in the United States into this matter—one by the United States Mines Department in 1923, one conducted by the company itself, and one conducted by the Surgeon-General's Department in Washington, from the report of which Lord Salisbury quoted in the last debate. Those inquiries were very elaborate, and the inquiry by the Surgeon-General's Department in particular entailed experiments not only having regard to the effects of this particular substance on animals, but also on human beings. Reports of an extremely voluminous character were issued to which Lord Buckmaster could have access at the Ministry of Health. Those committees have not found any actual evidence that harm had resulted from the ordinary commercial use of tetra-ethyl petrol. They did recommend—though he thought that he was right in saying that no legislation was introduced—that certain precautions should be adopted both in regard to its manufacture and its distribution in garages. Whether it was due to these precautions, or whether to some other reason he (Lord Gage) thought the following extract from a letter dated March 3rd, and written by the Surgeon-General to the Ministry of Health, was very important as bearing on this matter. The letter said:—

"As a result of this report, the precautions recommended by this Commission [that is the American Commission] for the manufacture of the substance have been carried out and the effect of the use of ethyl spirit on the distributers throughout a large area of this country has been under the immediate observation of the Public Health Service in coöperation with the authorities of the University of Cincinnati and others. I may add that notwithstanding the late publicity given to the investigations and the general use of the substance all over the United States and Canada, no instance of lead poisoning has been reported in the lay or medical press or to any of our Federal or State authorities."

Before condemning the Ministry of Health he (Lord Gage) thought that their lordships should take into consideration the experience of the whole of the Continent of North America where, after a precisely similar agitation conducted both by private individuals and the Press, after prolonged experiments and observations by the most authoritative examiners, no one during the whole of the five years that the spirit had been in use had been able to discover a single case of lead poisoning arising from the use of this substance, although its consumption, he was given to understand, ran into several millions of gallons a year. He was informed, he believed accurately, that the conditions under which this tetra-ethyl was blended with petrol in this country were precisely similar to those prevailing in America. They were under the close supervision of the Home Office, who had satisfied themselves that strict attention was paid to all the precautions found necessary in America, and that those precautions were fully adequate to meet the risk of poisoning. He was further informed that the conditions of distribution in this country were precisely similar to those prevailing in America. That was the case from the point of view of the Government. The committee which had been set up if they found evidence which might controvert in any way the findings of these American committees could, of course, at any time issue an interim report on which the Minister could make immediate application to Parliament for powers. In the Petroleum Bill which was now awaiting a third reading in the House of Commons there was a clause which enabled the Minister to make regulations as to the distribution or manufacture of any class of petroleum spirit which appeared to him to be dangerous or injurious to health, and this Bill would come before their lordships immediately after the Easter recess. He understood that substances containing lead compound equally poisonous in nature were manufactured and retailed subject only to the same restrictions and regulations as prevailed in the manufacture and distribution of tetra-ethyl petrol. He was speaking, of course, of commercial products, and not of chemical compounds. The Minister of Health was not in the least persuaded that until the committee had had time to issue at least an interim report the public would suffer any serious risk.

Viscount HALDANE said that he did not consider the announcement which had been made satisfactory in all respects. It was not enough that the committee should have power to make an interim report if it thought it desirable. He urged that the Government should issue an instruction to the committee to make an interim report on the question whether *prima facie* this substance was of a dangerous character, and whether there ought to be some restriction of its use. It might be a long time before a final pronouncement could be made.

The Danger of Poisoning.

Lord MONTAGU OF BEAULIEU said that there was an affinity between tetra-ethyl and lead glaze. If a person put tetra-ethyl on his hand and let it rest there the chances were that he would be poisoned. Wherever they had lead in suspension in very small quantities there was that danger. There was also danger arising from the fact that the ordinary exhaust from a motor car consisted of carbon-monoxide, and if they added a certain amount of lead in the form of tetra-ethyl it made carbon-monoxide more liable to cause insensibility. He had definite cases, the facts of one of which he held in his hand, of the effects of an exhaust of a car running on the road on the driver and the occupants of the saloon which was being driven. That was a matter which ought to have been inquired into before now. The American inquiries were not very conclusive when read carefully, and, in addition, it should be remembered that the sale of tetra-ethyl was not allowed in New York City, and that it was absolutely barred in the tunnel which ran under the Hudson River. Only a few days ago he had a letter from a gentleman residing at Aldershot in which he said that a son of a friend was suffering from bad lead poisoning as a result of absorbing tetra-ethyl through an abraised knuckle. There was sufficient evidence to make people who used this petrol very careful in doing so. He was also of opinion that the Government had been somewhat dilatory in setting up an inquiry, because it had been well known that there was danger. He made inquiries in France about a month ago, and he found that tetra-ethyl was not sold there.

The Marquess of SALISBURY said that with reference to the terrible instances of the results of the use of tetra-ethyl given by Lord Buckmaster—instances which he did not deny—it should be remembered that they referred to the handling of the poison itself before its combination with the petrol. It was admitted that this poison was a very strong poison. Of course, it was a very dangerous thing to deal with, as indeed there were many other elements in what went to make a commercial commodity which were dangerous. And yet they did not forbid them; what they did was to insist that certain precautions should be followed in the handling of these very dangerous substances. The committee which had been appointed would sit at once, and it was hoped to expedite its proceedings. He did not see what more could be done at this stage.

After further debate Lord Buckmaster's motion was rejected by 36 votes to 21.

HOUSE OF COMMONS.

TUESDAY, MARCH 27TH.

Supervision of Charities.

Sir ALFRED HOPKINSON asked the Home Secretary whether it was intended during the present session to bring in legislation to give effect to the recommendations of the departmental committee on the supervision of charities.—Sir W. JOYNSON-HICKS replied: A Bill for this purpose is in preparation, but I fear that it will not be possible to take it this session.

WEDNESDAY, MARCH 28TH.

Sanitation in Rural Districts.

Sir ROBERT THOMAS asked the Minister of Health whether he was aware that the sanitation of many rural districts was unsatisfactory; that local authorities were seldom able, for financial reasons, to exercise the powers they possessed; that consequently the Public Health Act of 1878 was to this extent a dead letter; and whether he would introduce legislation to modify the Public Health Acts as they affected villages and afford local authorities financial help from the Exchequer.—Sir KINGSLEY WOOD replied: The question raised by the hon. Member is at present, with other questions of local government, engaging the attention of the Royal Commission under the chairmanship of Lord Onslow. My right hon. friend must await the result of their deliberations, though he may say that he could hold out no hope of Exchequer assistance towards purely local obligations of this kind.

Health Conditions in Cornish Mines.

Mr. KELLY asked the Secretary for Mines what reports had been received from his officers regarding the condition of tin mines in Cornwall, especially the effect on the health of the workpeople.—Mr. HERBERT WILLIAMS (Parliamentary Secretary to the Board of Trade) replied: The health conditions of these mines are inspected by one of H.M. Inspectors stationed in Cornwall, and his reports show that generally they are satisfactory, and have improved of recent years.

Small-pox among Vagrants.

Mr. JOHN BAKER asked the Minister of Health how many cases of small-pox had occurred amongst vagrants visiting

casual wards during the past 12 months; when the last case occurred; and whether any measures were still being taken to prevent the spread of infection.—Mr. CHAMBERLAIN replied: I have no definite information as to the number of cases, but small-pox is known to my department to have occurred in some 60 casual wards during the present year. The most recent cases were reported on March 26th. As regards the last part of the question, I have renewed the instruction that, with a view to detecting cases of small-pox, all persons admitted to the casual wards of poor-law institutions shall be medically examined.

THURSDAY, MARCH 29TH.

Small-pox Hospital Accommodation.

Lieut.-Colonel FREMANTLE asked the Minister of Health what number of beds were available for small-pox, respectively, under the Metropolitan Asylums Board, the Surrey County Council, the Uxbridge joint hospital board, and the Willesden urban district council; what number were occupied, and what number are vacant; was he aware that two cases of small-pox occurring in the infirm ward at the Brentford union institution had to be isolated in that institution from March 16th to March 22nd, and another case from March 25th, rather than in a small-pox hospital; and whether he would secure that vacant beds in small-pox hospitals should be available for cases of small-pox from neighbouring areas, subject to proper chargeability of expenses incurred.—Mr. CHAMBERLAIN replied: The numbers of beds available for small-pox under the Metropolitan Asylums Board, the Surrey small-pox hospital committee, the Uxbridge joint hospital board, and the Willesden urban district council are 2123 (approximately), 19, 26, and 25 respectively. Of these beds only six are occupied at the present time. The answer to the third part of the question is in the affirmative. As regards the last part, while I am willing to do what is possible by persuasion, my hon. and gallant friend is no doubt aware that I have no power to require authorities possessing small-pox hospital accommodation to admit patients from other districts, the councils of which have made either no provision or inadequate provision for the purpose.

Boards of Guardians and Vaccination.

Sir COOPER RAWSON asked the Minister of Health whether it was proposed to take any, and if so what, action with regard to the resolutions received from boards of guardians or other local authorities calling for the abolition of Section 1 of the Vaccination Act, 1907, the effect of which would be to make vaccination compulsory; and how many resolutions he had received.—Mr. CHAMBERLAIN replied: This question will be considered in connexion with the report of the Committee on Vaccination presided over by Sir Humphry Rolleston. During the past five years I have received resolutions on this subject from 514 boards of guardians and other local authorities.

Royal Commission on Local Government.

Mr. WELLOCK asked the Minister of Health when the second report of the Royal Commission on Local Government would be ready for presentation.—Sir WILLIAM JOYNSON-HICKS (Home Secretary) replied: The Commission are still engaged hearing evidence, and it is not possible to make any statement as to the date on which the second report will be presented.

Voluntary Hospitals and Motor Accidents.

Mr. LUNN asked the Minister of Health if he was aware that many voluntary hospitals were being seriously affected financially by reason of the additional cases caused by motor accidents they had now to deal with; and whether the Government or the Cave Commission had considered what could be done to assist the hospitals to meet the increased cost made necessary in dealing with these cases.—Mr. CHAMBERLAIN replied: I understand that the question raised by the hon. Member has been considered by the Voluntary Hospitals Commission, and is dealt with in their report which will be issued shortly.

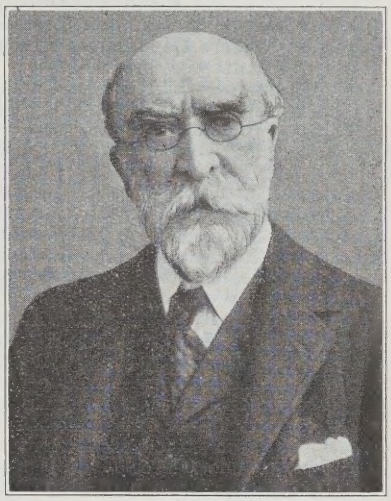
The Foundling Hospital Site.

Mr. ROBERT MORRISON asked the Minister of Health whether he would withhold his sanction from the proposal to erect a large block of flats, 97½ feet high, on the Foundling Hospital estate, in view of the importance of this open space, until the report of the Royal Commission upon Open Spaces had been published.—Mr. CHAMBERLAIN replied: The site of the Foundling Hospital, which is understood to be the site of the proposed flats, is not considered to come within the terms of reference of the Royal Commission on London Squares. The London County Council, under the Town Planning Act, have power to permit the erection of the flats referred to, and if they decide to give the permission, I have no authority to interfere.

Obituary.

GEORGE STEVENSON MIDDLETON, M.D., LL.D., F.R.F.P.S. GLASG.

Dr. G. S. Middleton, who died on March 21st, was a well-known figure in the medical life of Glasgow for a period of nearly 50 years. Born at Aberdeen in 1853, he was educated at the grammar school in that city and graduated as Master of Arts in the University before going south to study medicine at Glasgow. As a student he was recognised by his teachers, as well as by his classfellows, as a man of unusual ability; and from 1881, when he was appointed University assistant to Sir William Gairdner, the Regius Professor of Medicine, he had much to do with the moulding of character and determining the outlook of the students in the Glasgow School of Medicine, most of whom, at one time or another, passed under his instruction. Middleton had a great admiration for his chief, whom he always spoke of as being one of the most eminent physicians of the nineteenth century. Gairdner's teaching—his precept and example—was of the nature of an inspiration to all his students, and on his young assistant it had a very special influence. Of Gairdner's assistants and pupils Middleton was probably the one of all others who most faithfully carried out the Gairdner tradition for thoroughness in clinical investigation, as well as zeal in the study of morbid anatomy. Much of the class work at this time fell to the assistant, and the part that Middleton played in epitomising and preparing students for the final examination in medicine must be gratefully remembered by many hundreds of his former pupils.



DR. G. S. MIDDLETON.

Photograph by T. and R. Annan.

In 1894 Middleton was appointed physician to the Glasgow Royal Infirmary, and a few years later to the Royal Hospital for Sick Children. He now gave up systematic teaching and devoted himself entirely to clinical work. This period of his life was a very happy one, for he was full of enthusiasm for his work and he was on the best of terms with his various assistants and residents, as well as the students in his clinic. Many graduates would attend his ward visits, especially at the week-ends and in vacation time, and those who had this privilege derived great benefit and pleasure from association with their friend and teacher. From the time Middleton got charge of wards he soon acquired a busy consulting practice, and he made a most satisfactory consultant. He would quickly sum up the main points of the case, and he spoke wisely and well to the patients and to the patients' friends. He was invariably considerate of the feelings and interests of the practitioner under whose care the patient might be. He was, indeed, a very sound physician whose opinion was much valued and much in demand. Beyond recording some interesting cases he did not contribute much to medical literature, and his chief legacy to medicine has been the high standard of work which he always set before himself and impressed on all with whom he

came in contact. In thought and conduct likewise he had a very high standard, coupled with a quick appreciation for anything that was worthy in his fellows. A sincere and honest man, he had a warm heart and a genius for friendship, and was himself a staunch and loyal friend.

Dr. Middleton retired from practice two years ago, and on his seventy-third birthday was entertained by a large gathering of fellow-students, colleagues, and assistants.

HENRY LAWRENCE McKISACK, M.D.R.U.I., F.R.C.P. LOND,

DEEP regret is felt in Northern Ireland at the death of Dr. H. L. McKisack, which took place on March 26th after a brief illness. The medical profession in Belfast had no more popular member, and he was widely esteemed both for his personal qualities and his ability as a consultant. Born at Carrickfergus in 1859, Dr. McKisack was the son of the late James McKisack, of Belfast. He was educated at Holywood, Broadstairs, and Queen's College, Belfast, where he graduated with honours in the Royal University in 1887. After holding house appointments at the Royal Victoria Hospital, Belfast, he served for a time as gynæcologist to the Ulster Hospital for Women and Children, and took courses of post-graduate study in Dublin, London, and Birmingham. Appointment to the honorary staff of the Royal Victoria and other hospitals soon followed and Dr. McKisack embarked on successful practice as a consultant in Belfast. He became a Member of the Royal College of Physicians of London in 1904 and was elected to the Fellowship in 1916. A past-president of the Ulster Medical Society, he presided over the Ulster Branch of the British Medical Association in 1914–15, and served for many years as lecturer in clinical medicine in the Queen's University, Belfast, being also an examiner in medicine at Trinity College, Dublin. His teaching became widely known by the publication of two books on diagnosis and case-taking. He managed to read widely in general and scientific literature in spite of a busy life, whose responsibilities were increased during and after the war by appointment to the Ministry of Pensions staff for Ulster and to the Ulster Volunteer Force Hospital. One of Dr. McKisack's sons was killed whilst serving with the Royal Flying Corps, and his wife died last year. He leaves one son.

LANDEL ROSE OSWALD, M.B. GLASG.

THE death is announced of Dr. L. R. Oswald, who was for 21 years physician-superintendent of the Glasgow Royal Mental Hospital at Gartnavel. A Fifeshire man, Dr. Oswald studied medicine at Glasgow University and graduated in 1888, winning the Brunton Memorial Scholarship for the most distinguished medical graduate of his year, and the Foulis Scholarship. After a year spent as assistant house physician to Sir William Gairdner, he was appointed to the staff of the Royal Mental Hospital under Dr. David Yellowlees. Then came a short period spent in travel in the United States and Germany, followed by appointment, in 1895, as superintendent of the Glasgow District Mental Hospital at Garloch. Six years later he was back at Gartnavel as successor to Dr. Yellowlees, and he held the post of superintendent there until 1921, when ill-health made retirement necessary. During the intervening period Dr. Oswald was associated with the University as lecturer on insanity and was instrumental in starting an out-patient department for the treatment of mental and nervous diseases at the Western Infirmary. Interested in the research institute which works in mental hospitals in Western Scotland, he became recognised as a progressive and reliable psychiatrist and served as president of the Section of Mental Diseases of the British Medical Association, and of the West of Scotland Medical Association. His death on March 24th followed a long period of poor health.

FRANCIS BARCLAY WILLMER PHILLIPS, M.D. OXF., B.Sc. LOND., D.P.H.

WE have to record the death on March 23rd of Dr. F. B. W. Phillips, medical officer of health for the borough of Bedford for the last 23 years. A native of Hove, Dr. Phillips was educated at Balliol College, Oxford, and Guy's Hospital, qualifying as M.R.C.S. Eng. in 1883. He gained considerable experience of hospital work as house physician and resident obstetrician at Guy's, as assistant medical officer to the Eastern Small-pox and Fever Hospital, as resident clinical assistant at the East London Hospital for Children, and as clinical assistant at the Evelina Hospital and London Fever Hospital. Forty years ago he went to Bedford as a general practitioner and soon afterwards was appointed physician to the Bedford County Hospital and surgeon to the Bedford Provident Dispensary. In 1905 he became medical officer of health for the borough, and although 71 years of age, was still holding this office at the time of his death. Since the beginning of the year he had been kept hard at work by an outbreak of small-pox at the Bedford Poor-law Institution, and it is believed that his strenuous exertions in connexion with this epidemic were the immediate cause of his death.

Dr. Phillips, who was unmarried, was buried at Hove on March 27th.

RICHARD WILSON MULLOCK, M.D. DUB.

AT the age of 52, Dr. R. W. Mullock died on March 23rd at Southwold, where he had been in practice for many years. Educated at Trinity College, Dublin, he qualified in 1900 and went to South Africa as civil surgeon attached to the Royal West Kent Regiment. Soon afterwards he settled at Southwold, where he was elected to the Town Council in 1905, and held a number of local appointments. He was medical officer to St. Felix School and to the Post Office, and was honorary medical officer and radiographer to the Southwold Cottage Hospital, where his work was held in high esteem. During the late war he worked as chief medical officer of the hospital at Henham Hall and as commandant of the Local Voluntary Aid Detachment. A keen Freemason and sportsman, Dr. Mullock was popular in the district both among laymen and his professional colleagues, and was president-elect of the Suffolk branch of the British Medical Association. He leaves a widow, two sons, and a daughter.

JAMES BUCHANAN YOUNG, M.B., D.Sc., F.R.S. EDIN.

AFTER a short illness, Dr. J. B. Young died on March 17th at the age of 62. By his long association with the teaching of public health at Edinburgh he will be remembered by many generations of students who had the advantage of his instruction. Himself a graduate of the University of Edinburgh, he took his medical degree in 1890 and later proceeded to the B.Sc. and D.Sc. in public health. Soon after completing his medical studies he was appointed to the forensic medicine department, and when six or seven years later this department divided its functions, he became assistant in public health. In 1902 he took up work under Prof. Hunter Stewart at the Usher Institute, and seven years ago was appointed first lecturer in public health, continuing in this office when Colonel P. S. Lelean succeeded to the chair in this subject.

PRINCE OF WALES'S HOSPITAL, TOTTENHAM.—At the festival dinner of this hospital at the Mansion House Sir Berkeley Moynihan said that the institution had distinguished itself by throwing its doors wide open to the general practitioner and had established its fame already as a post-graduate hospital. It was announced that over £33,000 had been obtained towards the £50,000 asked for to pay off the debt and make some provision for recurring annual deficits.

Medical News.

UNIVERSITY OF OXFORD.—At a congregation on March 31st the degree of B.M. was conferred on D. H. Brinton and Olive H. Lister.

UNIVERSITY OF ABERDEEN.—At a graduation ceremony on March 28th the following degrees and diplomas were conferred :—

M.D.—F. Pearce Sturm (awarded highest honours for thesis), T. J. C. MacDonald (awarded commendation for thesis), A. M. Geddes.

M.B., Ch.B.—*F. R. Selbie (with first-class honours), †W. C. Davidson, and †M. G. Gibb (with second-class honours), Isabella M. O. Allan, E. R. Allison, N. J. Barron, W. J. Cumming, E. A. Cunliffe, †G. K. Ferres, H. D. Findlay, K. M. Finlayson, C. A. François, A. H. H. Fraser, E. R. Gauld, Dorothy F. Geershon, J. A. L. Innes, F. J. Lees, D. MacKenzie, F. E. Massie, G. E. Ord, J. B. W. Rowe, J. C. Smith, I. J. A. Stewart, R. Sutherland, G. H. Swapp, R. S. Venters, and P. M. Watt.

D.P.H.—Jean N. Howie, Aileen A. Nicol, E. R. Sorley, and M. Taylor.

* Completed Final Medical Professional Examination with much distinction. † With distinction.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—At a recent examination, out of 33 candidates entered, the following passed the Final Dental Examination and were granted the Diploma of L.D.S. :—

J. G. Stewart, H. G. Simon, J. M. Macdonald, R. M. Cameron, R. H. White, H. E. Gersohn, F. P. MacGillivray, R. McA. Blair, W. G. Hetherington, J. H. Rossouw, D. Silverston.

The following candidates passed in the undermentioned subjects :—

Pathology.—J. R. Rennie, K. MacGillivray, Elizabeth A. Wilson, D. A. H. Brown, A. C. J. Alexander, A. R. Hardy, F. T. C. Reakes, A. D. Dickson.

Medicine.—Dorothy Williams, H. G. Somerville, J. R. Rennie, C. V. Armitage, K. MacGillivray, Elizabeth A. Wilson, N. J. W. Smith, C. W. Collee, R. T. Amour, A. R. Hardy.

Surgery.—Dorothy Williams, H. G. Somerville, J. R. Rennie, C. V. Armitage, N. J. W. Smith, C. W. Collee, R. T. Amour, F. T. C. Reakes.

Dental Subjects.—A. C. J. Alexander, A. R. Hardy, J. F. Miller.

UNIVERSITY COLLEGE HOSPITAL.—The annual general meeting of the corporation of University College Hospital was held in the board room on March 29th, when Sir Herbert Samuelson, the chairman and treasurer of the hospital, presided. On the motion of the Chairman, Prince George was elected president of the hospital in succession to the Duke of Bedford, who has retired, and the officers for the year were afterwards chosen, Mr. A. G. Gumpert being elected vice-treasurer in view of the increasing financial responsibilities of the treasurer in consequence of hospital extensions. In moving the adoption of the annual reports and audited accounts for the year 1927, the Chairman referred to the loss which the hospital had sustained by the death of the chairman and treasurer, Sir Ernest Hatch, and of the vice-chairman, Lord Oranmore and Browne. Reviewing the progress of the hospital, Sir Herbert Samuelson said the principal event of the year was the opening of the new Royal Ear Hospital in Huntley-street, now incorporated with themselves and due principally to the munificence of Lieut.-Commander Geoffrey Duveen ; this hospital had already proved a valuable help to treatment and research, while eight single-bedded wards had been provided for patients of moderate means. The expenditure on the Royal Ear Hospital had been double that incurred for the old building—namely, about £6000 a year—and £3000 a year was required to meet additional expenditure. Progress had been made in the reconstruction work of University College Hospital, and the new south-west wing, which was opened in October last, contained 95 additional beds. There were new massage rooms, Finsen light and orthopædic departments, and three new operation theatres. A special feature of the hospital was the children's clinic which had been instituted under Dr. Wilfred Pearson. Through this department children were treated and watched from infancy to school age. The work in the genito-urinary department had been extended and a new clinic for mental defectives, under the charge of Dr. A. F. Tredgold, would give facilities to students which had not hitherto been available. The institution had accumulated a debt of £30,000, towards which £2900 had been received or promised, and although the appeal had not yet been really launched he could say that preparations had been made for a magnificent ball which he hoped would add considerably to the funds, while a dinner, it was hoped, would be held at the Mansion House at the end of the year. At the conclusion of the meeting Sir Courtauld Thomson revealed the name of a previously anonymous donor, who had promised £5000 to the hospital on condition that £2500 was subscribed by others. This, he said, was Sir Herbert Samuelson, who had agreed that his name should be known, hoping that the fact that one so closely associated with the institution was contributing would give confidence to other donors.

UNIVERSITY OF ST. ANDREWS.—The Senate has resolved to confer the degree of Doctor of Laws on Dr. E. P. Cathcart, F.R.S., Professor of Physiological Chemistry in the University of Glasgow, and Prof. William Darroch, Dean of the Medical School, Columbia University, New York.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—A meeting will be held on Friday, April 13th, at 8.45 P.M., at the Miller General Hospital, Greenwich. Mr. R. Ogier Ward will give an address on Some Difficulties in the Diagnosis and Treatment of Urinary Diseases.

NATIONAL HOSPITAL, QUEEN-SQUARE.—A post-graduate course on Diseases of the Nervous System will be held at this hospital from May 7th to June 29th. Particulars may be had from the Secretary of the Medical School, National Hospital, Queen-square, London, W.C.1.

NAVAL MEDICAL COMPASSIONATE FUND.—A meeting of the subscribers of the above fund will be held on April 26th, at 11.30 A.M., at the Medical Department of the Navy, Queen Anne's Chambers, Tothill-street, London, S.W.1, to elect six directors of the fund.

ROYAL FREE HOSPITAL.—In aid of the Centenary Appeal, the medical staff and students of the hospital are organising a ball to take place on May 1st from 9.30 P.M. to 2 A.M., at the B.M.A. House, Tavistock-square. Tickets may be had from the hospital or from the hon. secretary, May Day Ball, 24, Mecklenburg-square, London, W.C. 1.

Dr. C. M. Rolson (Chief Medical Officer) has been appointed an official member of the Legislative Council of the Presidency of Dominica ; Dr. Kenrick Stanton Wise (Surgeon-General), an official member of the Legislative Council of Trinidad and Tobago ; and Dr. A. H. McShine, an unofficial member of that Council.

LONDON CLINIC FOR RHEUMATISM.—On Sunday last Sir Thomas Horder broadcast an appeal on behalf of the clinic which the British Red Cross Society is hoping to erect near Regent's Park (see THE LANCET, March 10th, p. 505). Donations amounting to more than £21,000 have been received towards the £40,000 required for this purpose. They include contributions from the King, the Queen, and other members of the Royal Family.

EASTBOURNE ROYAL EYE HOSPITAL.—In April, 1924, when new wards and operating theatre were opened, it was thought that this hospital was completed, but the work has so much increased that the governors report that it has become necessary to purchase an adjoining house in Cavendish-place. For this extension they are appealing for £2500.

MEMORIAL TO DR. W. J. FRANCE.—The Lord Mayor of Liverpool recently unveiled a tablet over a bed in the Royal Infirmary of Liverpool, which has been endowed for auto-laryngeal work by the late William James France, F.R.C.S. Edin., hon. surgeon to the Ear and Eye Infirmary, Liverpool.

CANCER CAMPAIGN IN IRELAND.—The National Cancer Campaign is continuing its activity in holding public meetings in provincial centres. On March 30th a meeting was held in the Town Hall, Waterford, under the presidency of the Mayor of Waterford. Addresses dealing with the work of the campaign were given by Sir William Taylor and Dr. Robert J. Rowlette, of Dublin, by the Very Rev. the Dean of Waterford, and by Dr. M. P. P. Higgins, of Waterford. In his address Sir William Taylor spoke of the increasing mortality from cancer, and described the early signs of the various forms of the disease. Dr. Rowlette spoke of the special need in Ireland for provision for research on health matters, and of the problems that await solution in regard to cancer. Steps were taken at the meeting to form a local committee.

SWISS RED CROSS OFFICIALS.—The death is announced of Mr. Gustave Ador, President of the International Committee of the Red Cross, and of Dr. Karl Bohny, chief medical officer of the Swiss Red Cross Society. Mr. Ador, who was 85 years of age, was largely responsible for founding the Prisoners of War agency at Geneva, which centralised the search for missing civilians and soldiers in the theatres of war. He was a Swiss delegate to the Assembly of the League of Nations until 1924 and was elected honorary President of the Assembly in 1921. Dr. Bohny, who has died at the age of 72, was for many years professor of medicine in the University of Basle. During the war he was in charge of the exchange of wounded between Germany and the Allies and for the internment of combatants in Switzerland. Since 1919 he had been President of the Swiss Red Cross.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

FRIDAY, April 13th.—4 P.M., WAR. Annual General Meeting: Election of officers and council. 4.30 P.M., WAR, OTOLOGY. Special discussion on Effects of Middle-ear Disease on Efficiency in Civil and Military Life. Openers: Wing-Comdr. D. Ranken, R.A.F. (War) and Mr. Sydney Scott (Otology); time allowance for speaking, 15 minutes each. Lieut.-Colonel T. B. Layton and Mr. T. Ritchie Rodger (Otology); and Major Hare, R.A.M.C., and Surg-Comdr. Maxwell, R.N. (War); time allowance for speaking, 10 minutes each. Subsequent speakers will be limited to 5 minutes each.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith.

MONDAY, April 9th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Dr. Trevor Davies: Gynæcological Department. 2 P.M., Dr. Ironside: Medical Out-patients.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department. 2 P.M., Mr. Addison: Operations.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9 A.M., Mr. Vlasto: Operations on Throat, Nose, and Ear. 9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Medical Diseases of Children.

Daily, 10 A.M. to 5 P.M., In-patients, Out-patients, Operations, Special Departments, Anæsthetic and Operative Surgery Classes.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 13th.—4 P.M., Mr. Nicol Rankin: Examination of Cases Complaining of Discharge from the Nose.

Appointments.

MONTFORD, T. M., M.B., Ch.B. Glasg., has been appointed Resident Medical Officer, Kettering General Hospital.

THIERENS, V. T., M.B., Ch.B. Liverp., D.P.H., Medical Officer of Health for Blackburn.

King's College Hospital: LIVINGSTONE, J. L., M.D. Lond., M.R.C.P. Lond., Junior Physician; SHELDON, W. P. H., M.D. Lond., M.R.C.P. Lond., Junior Physician for Diseases of Children; HUNTER, J. B., M.Chir. Camb., F.R.C.S. Eng., and EDWARDS, H. C., M.B., B.S. Lond., F.R.C.S. Eng., Junior Surgeons; MOORBY, A. L., M.R.C.S., L.R.C.P. Lond., Junior Anæsthetist; NEWMAN, C. E., M.D. Camb., M.R.C.P. Lond., Senior Medical Registrar; COVE-SMITH, R., M.B., B.Chir. Camb., M.R.C.P. Lond., and DAGGETT, W. I., M.B., B.Chir. Camb., F.R.C.S. Eng., Registrars; NEWMAN, J. L., M.R.C.S., L.R.C.P. Lond., COGSWELL, A. P., M.R.C.S., L.R.C.P. Lond., CUMINGS, J. N., M.R.C.S., L.R.C.P. Lond., BATTEN, G., B.M., B.Ch. Oxf., WHIDBORNE, E., M.R.C.S., L.R.C.P. Lond., SAPWELL, J. I., M.R.C.S., L.R.C.P. Lond., CHILCOTT, J. C. K., B.M., B.Ch. Oxf., HALL, V. F., M.R.C.S., L.R.C.P. Lond., RUTHERFORD, R., M.R.C.S., L.R.C.P. Lond., SHEPPERD, N. L., M.R.C.S., L.R.C.P. Lond.; MACMYN, D. J., M.R.C.S., L.R.C.P. Lond., SCRIVEN, W. H., M.R.C.S., L.R.C.P. Lond., HUMPHREYS-OWEY, I. R., M.R.C.S., L.R.C.P. Lond., GROSS, G. J., M.R.C.S., L.R.C.P. Lond., and FERRABY, G. S., M.R.C.S., L.R.C.P. Lond., Resident Medical Officers; LIMMEX, E. G., M.R.C.S., L.R.C.P. Lond., House Surgeon in the Ophthalmic Dept.; WALKER, T. DE L., L.S.A., Junior House Anæsthetist; MAY, K. S., M.R.C.S., L.R.C.P. Lond., House Surgeon; Aural and Throat Depts.; GILES, C. P., M.R.C.S., L.R.C.P. Lond., LISTER, C. H., B.M., B.Ch., and SHACKLE, M. P., M.R.C.S., L.R.C.P. Lond., Assistant Casualty Officers; and ROBERTSON, W. I., L.D.S., WYBORN, L. A., L.D.S., and MOORE, A. S., L.D.S., House Surgeons in the Dental Dept.

Vacancies.

For further information refer to the advertisement columns.

Bangor, Carnarvonshire and Anglesey Infirmary.—H.S. £200.

Bath, Somerset and Wilts Central Children's Orthopædic Hospital. Asst. Res. M.O. At rate of £120.

Brit Memorial Fellowships for Medical Research, 35, Clarges-street, W.—Junior Fellows. £400.

Birmingham, Highbury and Uffculme Hospitals.—Jun. Res. M.O. £300.

Bolingbroke Hospital, Wandsworth Common, S.W.—Out-patients' Officer to Ophth. Dept. £35.

Bradford Royal Infirmary.—Two H.S.'s and H.P. Each £150.

Bury and District Joint Hospital Board.—Res. Asst. to Med. Supt. £400.

Calcutta School of Tropical Medicine.—Research Worker. Rs. 1250 per mensen.

Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist. At rate of £180.

Carlisle Non-Provident Dispensary.—Res. M.O. £250.

Chesterfield and North Derbyshire Royal Hospital.—Jun. H.S. and Cas. H.S. Each at rate of £100.

Connaught Hospital for Walthamstow, Wansted and Leyton.—Jun. Res. H.S. At rate of £100.

Derbyshire, Royal Infirmary, Derby.—H.S., Asst. H.S., and Cas. O. Each £150.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas. Also Surgeon in charge of Out-patients.

Gravesend and North Kent Hospital.—Res. M.O. and H.S. At rate of £250 and £150 respectively.

Grocers' Company.—Research Scholarship. £300.

Guildford, Royal Surrey County Hospital.—H.S. £150.

Guildford Union Institution, Warren-road.—Res. M.O. £500.

Halifax Royal Infirmary.—Third H.S. At rate of £100.

Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.S. and H.P. Also Cas. M.O. Each at rate of £100.

Infants Hospital, Vincent-square, Westminster.—Med. Reg. £120.

Laboratories of Pathology and Public Health, 6, Harley-street, W.—Asst. Pathologist. £500.

Liverpool Eye and Ear Infirmary.—Third Hon. Anæsthetist.

London Hospital, E.—First Asst. and Reg. to one of the five Surg. Firms. £300.

Lucknow University.—Professor of Anatomy. Rs.1450 per mensem.

Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300. Also Dickinson Surgery Scholarship. £75.

Metropolitan Hospital, Kingsland-road, E.—Sen. H.P. and Sen. H.S., Jun. H.P. and Jun. H.S. Also two Cas. O's. Each at rate of £100.

Ministry of Health, Whitehall, S.W.—Deputy Regional M.O. £800.

Nottingham General Dispensary.—Res. Surg. £250.

Norwich, Norfolk and Norwich Hospital.—Cas. O. and H.S. £120.

Plymouth, South Devon and East Cornwall Hospital.—Cas. H.S. At rate of £50.

Portsmouth, St. Mary's Infirmary, &c.—First Asst. Res. M.O. £350.

Preston, Lancs, County Mental Hospital, Whittingham.—Sixth Asst. M.O. £350.

Rochdale, Birch Hill Hospital and Institution, Dearnley.—Asst. Res. M.O. £250.

Royal Chest Hospital, City-road, E.C.—Res. M.O. At rate of £150.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. At rate of £100.

St. Mary's Hospital for Women and Children, Plaistow, E.—Asst. Res. M.O. At rate of £130.

Sheffield, Children's Hospital.—Jun. H.S. £100.

Sheffield Royal Infirmary.—Hon. Radiologist.

Torquay, Torbay Hospital.—Res. M.O. £200.

Walsall County Borough.—Clin. Tuberculosis O., &c. £750.

Walsall General Hospital.—H.S. At rate of £125.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Registrar. £200.

Births, Marriages, and Deaths.

BIRTHS.

EDWARDS.—On March 26th, at Sutherland-avenue, the wife of Harold Edwards, F.R.C.S., of a son.

HOSFORD.—On March 30th, at Hornsey Lane-gardens, Highgate, N., the wife of Reginald W. P. Hosford, F.R.C.S., of a son.

MELVILLE.—On March 27th, at Lancaster-road, N.W., the wife of William Spence Melville, M.B., Ch.B., of Hornsey rise, N., of a daughter.

SUTHERLAND.—On April 1st, at a nursing home, the wife of Halliday Sutherland, M.D., New Cavendish-street, W., of a son.

MARRIAGES.

BOOG WATSON—SVOBODOVA.—On March 24th, at the Town Hall, Prague, and afterwards at the Church of the Bohemian Brethren, Vinohrady, Prague, William Nairn Boog Watson, M.B., Ch.B., Tor-na-Dee, Murtle, Aberdeenshire, to Vera Marie, only daughter of Dr. and Mrs. Jos. Svobodova, Kladska, Prague, Czechoslavakia.

MCCALLUM—LACAILLE.—On March 31st, at St. Columba's (Church of Scotland), Pont-street, Alexander Grigor McCallum, M.B., Ch.B., to Marion Bowie, elder daughter of the late Fernand Lacaille and Mrs. Lacaille, of Hillhead, Glasgow.

DEATHS.

BRADSHAW.—On March 30th, at "Sherbrook," Bournemouth, William Lucknow Bradshaw, L.R.C.P., D.P.H., in his 69th year.

ELMES.—On March 25th, at Cannes, of pneumonia, Major C. H. Elmes, C.B.E., V.D., M.B., Ch.B.

MCKISACK.—On March 26th, suddenly, Henry Lawrence McKisack, M.D., F.R.C.P., of University-road, Belfast.

POPE.—On March 30th, at The Garth, Hereford, H. B. Pope, M.D., in his 69th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

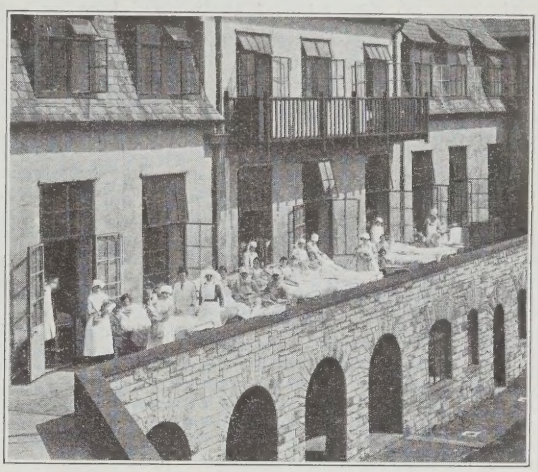
A SCOTTISH MATERNITY HOSPITAL.

Dr. Elsie Inglis, who became famous throughout the world for her work in Serbia with the Scottish Women's Hospitals during the late war, is commemorated in Edinburgh by the maternity hospital which bears her name. Built on a beautiful site commanding a view of King's Park, behind Holyrood, it has now been in use for two and a half years. The work done there is a direct continuation of what Dr. Inglis did in Edinburgh long before the war, and from the latest annual report, which has just been issued, it is clear that the services of the institution are increasingly valuable to the city and appreciated by the citizens. Last summer it became necessary to open all the available wards, and to avoid overcrowding the booking of patients had to be curtailed. A good effect of this, it may be noted, has been to bring the patients to the ante-natal clinics at an earlier stage in their pregnancy.

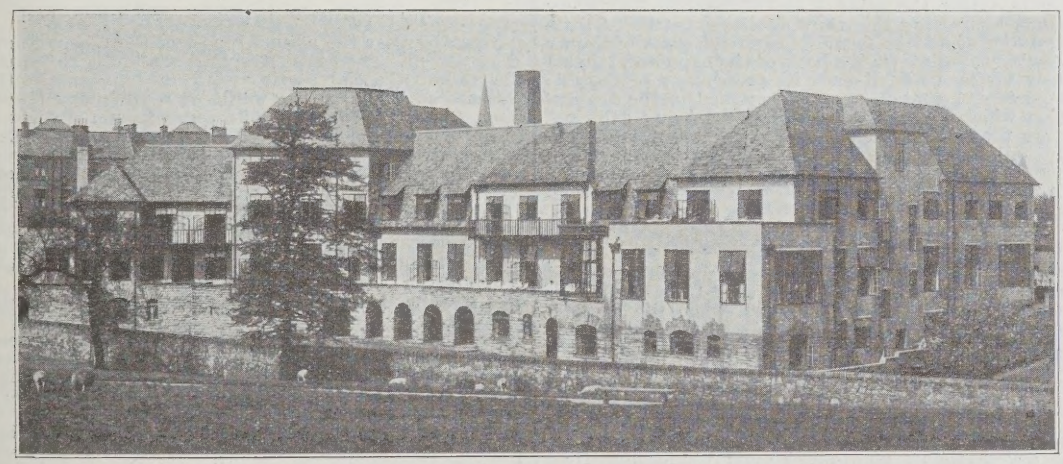
The photographs (by F. C. Inglis, Edinburgh) which we reproduce show some of the attractive features of the building, whose architect was Mr. H. O. Tarbolton. It was laid out in such a way as to make the greatest possible use of a sloping site of unequal boundaries, the longest side being that towards the King's Park. Three main corridors meet in an octagonal centre—one leading into hospital, a second into administration, a third into service and kitchens. The wards, which contain four, three, or two beds each, open on to a wide stone terrace—verandah on the park side, on which beds can be rolled out with ease. The usual offices, district room, receiving room, serving kitchen, baths and lavatories, drying room, side room, and sterilising rooms open to the back. The delivery wing, which is cut off from the wards by special corridor, communicates with the inner sterilising room and theatre nurses' accommodation, and consists of an ante-room of two beds, in the quietest corner of the hospital, a theatre, doctors' scrubbing room, smaller delivery room, and a dismissal room with a separate patients' entrance, where every patient is seen by a member of the visiting staff before leaving the hospital.

At the south-east corner of the building, with sunlight on three sides, are the nurseries, communicating with a part of the verandah enclosed in glass; one is fitted with a glass service table, always warm from the steam-pipe underneath; another contains an enclosure for premature infants as well as bench and basket accommodation for 30 infants. On the first floor is a special self-contained ward for nine beds, with treatment room, sterilising room, and isolation room. Small wards run along the park front as on the floor below, a flat roof doing duty as a verandah; there are isolation wards on both flats. The administration corridor leads on the ground floor to staff dining room and sitting room, board room, staff and secretary's offices, sisters' accommodation, and linen room; above are bedrooms for nurses, and on the second floor accommodation for ten resident doctors. The service corridor leads to kitchen, larders, service hall, and pantry below, and to bedrooms for men above. On a basement flat, but well above ground, are an engineer's house, with separate entrance, drug room and dispensary, pathological room, ward for waiting patients with dining room and pantry attached, ward matron's accommodation, and at the back hand laundry and wash-house, with large drying room. Twin Cornish boilers supply high-pressure steam to the kitchen for cooking, to the delivery block, sterilising rooms and nurseries, reduced steam for heating over the entire building, and an ample domestic hot water-supply.

Since the hospital was opened in August, 1925, the pressure on the beds has increased so rapidly that a nurses' home is under construction, which will contain 36 bedrooms, a recreation room, and a separate flat for chauffeuse. An adjacent bungalow has been acquired which will add ten beds for antenatal use and special isolation. A double-steel bungalow (Atholl type), with playground and sandpit gives satisfactory out-patient accommodation at the hospital gates. With the completion of the nurses' block and adaptation of the bungalow, the hospital will provide 70 beds, with staffs for out-patient service and district work, as well as full in-patient equipment.



A sunny balcony.



General view of the Elsie Inglis Memorial Hospital.

The staff consists of four visiting surgeons and physicians, four resident doctors, a pathologist and a medical registrar; and the nursing staff of the matron, six sisters, two staff nurses, and 20 pupil midwives (most of these being fully trained nurses).

The Elsie Inglis Memorial Hospital is the outcome of 20 years' devoted work by women doctors among wives and mothers living in crowded slum and tenement areas in a large city. The needs of the women close at hand have been keenly realised. The board of management feel that a walk along the terrace-verandah after working hours, when husbands come in to see their wives and babies without restriction, has carried the conviction to many a visitor that the social side of maternity work, with freedom from anxiety, rest in beautiful surroundings, an atmosphere of happiness, is second only to surgical efficiency and thoroughness in promoting the welfare of mother and infant.

NEW PREPARATIONS.

Radiostoleum.—We have received from British Drug Houses, Ltd., 16-30, Graham-street, London, N., a preparation, Radiostoleum, which is described as a highly active mixture of a solution of radiostol (containing vitamin D) and a concentrate of vitamin A in a tasteless vegetable oil, the latter being made in their chemical works from a new source of this vitamin. We recommended radiostol in a recent issue of THE LANCET (Feb. 25th, 1928) in terms suggesting its utility in cases of vitamin D deficiency, and the new preparation proposes to combine therewith a preparation containing vitamin A for its growth and resistance-promoting properties. The preparation might well be tried where cod-liver oil has failed to produce the desired effects. Radiostoleum is put up in boxes containing 50 capsules, the dose being 1 to 2 capsules daily, and in solution, the bottles containing one half a fluid ounce, while the dose ranges from 3 to 6 minims daily. The recommended doses show the concentrated nature of the preparation.

Caprokol.—This preparation also is put on the market by British Drug Houses, Ltd. Clinical reports published on the introduction of hexyl resorcinol indicated certain valuable properties possessed by the drug, and a caprokol antiseptic solution has now been prepared by the British Drug Houses for use in the disinfection of the skin and mucous membranes in cases of abrasion or wound. It can be employed undiluted or diluted with water in varying proportions, when a useful disinfectant is formed for application in nose and throat and in dentistry. Actually caprokol antiseptic solution is a 1 in 1000 solution of caprokol in water and glycerine, 30 parts glycerine to 70 water, possessing a low surface tension and retaining its disinfecting powers under adverse circumstances. It is issued in 3 oz. and 12 oz. bottles with directions for use.

Dimol Catarrh Snuff.—The claims made for Dimol as an intestinal disinfectant, which are supported by the clinical experience of a good many specialists, are well known. The chemical constitution of Dimol is $C_6H_2(CH_3)_2(OCH_3)OH$, and tests have confirmed freedom from toxicity. At the Dimol Laboratories (40, Ludgate-hill, London) there has now been prepared an insufflation powder designed more especially to prevent and remedy nasal catarrh; the literature on the subject will be supplied to any practitioner who applies to the laboratories, while the distributing agents are Messrs. Sangers, 258, Euston-road, London. It is recommended that the snuff should be taken every hour during the acute stage of catarrh, and every two or three hours when the symptoms have abated. A little of the powder should be tumbled from the glass container in which it is supplied on the back of the hand and inhaled vigorously up each nostril until its presence is perceptible to the palate. A container is also supplied to the medical profession which ensures the correct dose being delivered and waste prevented. Relief of the distressing nasal congestion is followed by a decrease in the headache which often accompanies nasal catarrh, and many victims of a tiresome malady may be glad to learn of the preparation through their doctors.

THE TWO-SHIFT SYSTEM.

THE two-shift system of employment was much advocated nine or ten years ago, particularly by Lord Leverhulme, but continued trade depression since 1920, when the employment of protected persons on this system was legalised, has discouraged many employers from introducing it. Nevertheless, it has been tried, and a study has been made of the results. Under this system two shifts of not more than eight hours each may be worked between 6 A.M. and 10 P.M., from Monday to Friday, and from 6 A.M. to 2 P.M. on Saturday. Thus machinery can be kept running for 88 hours a week, though no worker is employed for more than 48 hours. A report now issued [1] contrasts output, lost time, and labour turnover of the same workers when employed as ordinary day-workers and on the shift system. So far as the operatives are concerned, no definite advantage with regard to sickness experienced could be ascribed to either system. In practice the shift-workers were employed for fewer hours than the day-workers, but their hourly output was rather greater and their voluntary rest-pauses were fewer; the final result was 4 per cent. less output per worker. Labour turnover was rather greater on the shift-system, but was far highest when the two systems were interchanged. Once the shift-system was steadily going, habit caused it to be preferred to the day-system, whilst the opposite held good where the day-system was well established. The human factor, indeed, does not seem to be affected for weal or woe by the shift-system. Hence, should trade ever boom again, attention may be drawn to the observation that "an employer who changed from ordinary day-work, with a 48-hour working week, to shift-work, with a total working week of 82 hours, might have expected an increase of output *per machine* of rather over 92 per cent." Such an employer would have 92 per cent. more output over which to distribute his overhead expenses.

[1] The Two-Shift System in Certain Factories. By May Smith and M. D. Vernon. Industrial Fatigue Research Board. Report No. 47. H.M. Stationery Office. 1928.

A VIRUS IN PNEUMONIC LUNGS.

THE frequent association of labial herpes with pneumonia has long been recognised, and it has been known for some time that labial herpes is caused by a virus which produces an inflammation of the cornea in rabbits, afterwards spreading to the brain and causing an encephalitis; the rabbit reaction is indeed our only means of recognising the virus. Using this test, Dr. J. R. Perdrau (*Jour. Path. Bact.*, 1928, xxxi., 9) searched for the herpetic virus in human lungs; he failed to find it in 50 cases, 26 of which were frankly pneumonic. But in 40 lungs there was some agent present which produced a keratitis in rabbits, independently of any bacteria and transmissible in series; it differed from the herpetic virus in never causing encephalitis, and cross-immunity experiments showed no evidence of any relationship. When the attack induced by rubbing an emulsion of lung on to the scarified cornea subsides, the cornea is more sensitive to a second and third application. The meaning of this new virus is quite obscure; it was found in a variety of pulmonary lesions ranging from simple congestion to lobar pneumonia and was most abundant during a time when pneumonia was epidemic; the data are not sufficient to judge how far it occurs in normal or semi-normal lungs. The discovery of these invisible living agents, which cannot be cultivated, seems to depend mostly on finding some characteristic reaction which will reveal their activities; how much of what goes on in the world is due to them we have at present no idea, but they become more and more important.

THE KEM-DENT STERILE TOOTHBRUSH.

THIS is a tubular glass container at the bottom of which is a cotton-wool pad impregnated with a germicide, its object being to keep the toothbrush sterile. The other end of the tube is closed with a rubber stopper to which the handle of the brush is fixed, but from which it is detachable. By this means the brush can always be kept in a sterilised atmosphere. Enamelled holders to suspend the appliance to the wall are supplied. The makers are the Lavoden Company, Ltd., Denmark-road, West Ealing, London, W.13.

THE CICELY NORTHCOTE TRUST.

YEAR by year the annual report of the Cicely Northcote Trust of St. Thomas's Hospital continues to emphasise the value of social service work in connexion with the patients admitted to the wards of a voluntary hospital—work which has features quite separate and distinct from those characterising out-patient departments. In the eighteenth report just received three main features stand out—the after-care work done for the neurotic and mentally unstable, the after-care of cancer patients, and the Northcote Trust Hostel. With regard to the neurotics, the report points out that one of the outstanding difficulties in helping a patient to re-establish himself in the environment of the world outside a sheltered hospital life is the impossibility of obtaining consecutive and detailed information as to past treatment and to the causes which led up to the sudden admission to institutions. It is suggested that some machinery is necessary for "passing on" histories from one treatment centre to another. The after-care of the cancer patient has a very different aspect from that of the case work for the neurotic. The help needed to make the "bit of savings" last to the end which will inevitably come, the necessity for befriending the unmarried middle-aged women patients with no relations or friends, the provision for the young mother with malignant disease and a family of little ones, these are some of the problems with which the social service department is in daily contact. The Northcote Trust Hostel which ministers to the needs of women and girls from the venereal disease department shows a record of good work amongst many different types of patient admitted. A classification of patients according to mental equipment reveals the fact that 16 were regarded as of normal intelligence out of 40 cases admitted between 1924 and 1925, the remainder showing deficiency or defect of one type or another.

A perusal of this report with its record of manifold activities makes us wonder how any large hospital, special or general, can possibly carry on without a social service department.

Mr. W. H. Martindale, manufacturing chemist, after a tenancy of 54 years at No. 10, New Cavendish-street, London, W., has now rebuilt and opened his pharmacy under modern conditions at No. 12 in the same street, with a wholesale entrance at 33, Hallam-street.

Goulstonian Lectures

ON

SOME PROBLEMS OF NEPHRITIS.

The Third Goulstonian Lecture in 1928 delivered before the Royal College of Physicians of London on March 20th

BY T. IZOD BENNETT, M.D. LOND.,

FELLOW OF THE COLLEGE; PHYSICIAN TO OUT-PATIENTS, MIDDLESEX HOSPITAL, AND TO THE ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.

LECTURE III.*—THE PROBLEM OF BLOOD PRESSURE IN NEPHRITIS.

IN my first lecture I described a case in which the patient died of uræmia following progressive destruction of both kidneys by cystic disease. This case was selected in order, first, that the problem of uræmia might be studied in a case of non-inflammatory destruction of the renal substance, and secondly, because neither œdema nor elevation of the blood pressure was a marked feature of the case. In other words, the case illustrated the important fact that uræmia is not necessarily associated either with renal inflammation, or with so-called "renal" œdema, or with hyperpiesia.

In my second lecture I endeavoured to summarise the evidence by which I think one is driven to the conclusion that œdema occurring in cases of renal disease points to tissues other than the kidneys being affected, whilst there is no evidence to prove that such œdema is the result of the renal lesion.

To-day I approach the subject of high blood pressure, and am at once aware that the problems here are, for the lecturer, even more difficult than those already discussed. For in the case of uræmia and œdema we are confronted with masses of complex data the sifting of which is a task of great complexity, although certain conclusions emerge after close analysis. When considering high blood pressure and its relation to renal disease, on the other hand, one is often confronted with an absence of essential data which makes it impossible to draw conclusions at all.

The patient whose story I discussed in my first lecture, and the man I showed in my second lecture, illustrate the frequency with which hyperpiesis is absent in cases of renal disease. We can perhaps best approach the subject by first inquiring into the groups in whom hyperpiesis is most marked. We at once find that there are three main groups:

(A) Those which constitute what has too often been called "chronic interstitial nephritis," or "granular kidney."

(B) The group which embraces the renal complications of pregnancy, including eclampsia.

(C) The acute glomerulo-nephritis which is seen as a complication of scarlatina and some other infectious diseases.

It will be well to examine these groups in greater detail.

(A) "CHRONIC INTERSTITIAL NEPHRITIS"; ESSENTIAL HYPERTENSION.

Of all cases of renal disease those in this group probably exhibit high blood pressure most prominently. They were well recognised by Bright, who in his Goulstonian lectures spoke as follows:—

"In April, 1830, Dr. George Burrows brought me a kidney in a most confirmed state of granulation, so completely pervaded with deposit as to have lost all the structure of the cortical portion, and to have put on a marked scabrous wall externally. This was taken from a patient who had been in St. Bartholomew's Hospital for a fortnight only with confirmed anasarca, and in addition to the disease of the kidney, the heart was greatly enlarged and otherwise diseased. In this case . . . the urine had shown no tendency to coagulate by heat."

He goes on to quote a still more interesting case brought to his observation by Dr. Watson of the Middlesex Hospital—

"the kidneys showed the typical organic change found in anasarcous patients which is so often accompanied by the secretion of albuminous urine, but this state of the urine did not exist during the time he was under Dr. Watson's observation, and the action of the kidney was so far annihilated that even by gin and stimulating diuretics only a scanty secretion was obtained,"

and he goes on to record the important fact that the heart was much enlarged without any sufficient cause being found. Elsewhere in the same lectures Bright several times remarked on this mysterious association of cardiac hypertrophy and sclerotic kidneys and on the irregularity of albuminuria in such cases.

It is hardly necessary for me to mention that these cases were the subject of the classical studies of Gull and Sutton, who under the name of arterio-capillary fibrosis described the generalised change in the small vessels which is now usually considered the primary cause of the renal changes.

To another physician at Guy's Hospital, Dr. F. A. Mahommed, we owe the continuation of this work and almost the earliest observations on the blood pressure in such cases. He clearly paved the way to the work of Sir Clifford Allbutt and others, who have shown convincingly that in an enormous number of cases of contracted kidney there is evidence of high blood pressure for many years before any renal lesion makes itself manifest. The work of these observers has been well described in a recent article by Ryle.

"Hyperpiesia," "essential hypertension," and "arteriolosclerosis" are synonyms used in the description of this condition, which formed the subject of one of the Goulstonian lectures delivered by Dr. Geoffrey Evans five years ago. Its ætiology remains obscure; it is probable that the high blood pressure is at first the result of a widely distributed spasm of the arterioles, and that the anatomical change which Evans describes as "diffuse hyperplastic sclerosis" is a subsequent event. Moreover, the physiological researches of Anrep and Starling, and the pathological investigations of Bordley and Baker produce evidence that the failing blood-supply to the medulla oblongata is of primary importance in the genesis of these vaso-motor responses which establish the condition of prolonged hypertension.

Whatever will in the future be established as the explanation of this disease, the present evidence seems to be against the probability that the renal changes are either of primary importance or of invariable occurrence. Fishberg in an investigation of 72 of these cases found advanced renal disease present in only five at autopsy, and his conclusion that the anatomical changes of the kidney are not compatible with the theory that hypertension is primarily due to a disorder of the renal function is one which finds increasing acceptance at the present day.

We must, I think, recognise that there are at least three stages in the development of this disease if we include only those cases which at some time exhibit evidence of renal disease. There are probably many patients in whom the kidney escapes damage altogether. But taking the evolution of a case which terminates in uræmia, following progressive destruction of the renal substance, the patient will exhibit—

1. A stage in which there is hyperpiesis, with a systolic pressure in the neighbourhood of 200, left-sided ventricular hypertrophy, and probably no other sign or symptom for many years. The effects of such an abnormality may lead to cardiac failure or cerebral hæmorrhage, but these complications are outside our present survey and we will confine our attention to those cases in which the kidney suffers.

This being so, our patient will pass on to—

2. A stage in which the progressive disease of the arterioles in the renal tissues is beginning to reduce the areas of effective kidney substance to a pathological degree. The patient's condition is now similar to that of an animal in

* Lectures I. and II. appeared in THE LANCET of March 17th and 31st, pp. 535 and 637 respectively.

which more than half, but less than three-quarters, of the renal substance have been extirpated. The number of functioning glomeruli and tubules is so reduced that the kidney cannot excrete its full quota of urea in fully concentrated form, but it is able to do so provided that such urea can escape in a dilute condition. There are, accordingly, no changes in the blood chemistry but a polyuria is present, and by day and by night the patient passes large quantities of urine of low specific gravity containing a low concentration of urea. This is what Fishberg has designated "compensated renal failure."

From this stage the patient gradually passes on to—

3. A stage in which he cannot excrete all the waste products of protein metabolism, even in a dilute condition. He therefore continues to exhibit a urine of low specific gravity and fails to respond to tests such as the urea-concentration test. But, in addition, he has an increasing retention of nitrogenous substances in the blood, and this nitrogen retention becomes more and more marked, is accompanied by phosphate retention, and finally by a retention of substances such as chloride which normally exhibit but little concentration during their passage from blood to urine. He dies in uræmia, and at the autopsy small red contracted kidneys are found.

These, then, are typical examples of arterial hypertension with renal disease, and they are to be regarded as cases in which a progressive narrowing of the arterioles has produced secondary disease of the kidney, and the following conclusions emerge:—

1. On available evidence we must believe that "chronic interstitial nephritis" so-called, and essential hypertension are different stages of one and the same disease.

2. In this disease hypertension always precedes, and often by many years, all clinical signs of renal damage. In the later phases hypertension is found associated with all grades of renal insufficiency.

3. The anatomical change found post-mortem in this disease consists of: (*a*) a generalised sclerosis of the arterioles; (*b*) cardiovascular hypertrophy; (*c*) varying degrees of ischæmic destruction of the renal tissues.

4. Renal sclerosis is part of a generalised vascular change, and is in all probability neither an early nor even an essential part of this vascular change.

5. Hypertension and diffuse sclerosis of the arterioles must be considered as associated manifestations of a single disease, though at present we are unable to prove that hypertension is either the cause or the effect of these vascular changes.

(B) THE RENAL COMPLICATIONS OF PREGNANCY.

In discussing this branch of our subject we are again confronted with difficulties of nomenclature. During pregnancy a series of complications is frequently encountered, ranging from the appearance of a slight albuminuria with no other sign or symptom, to severe albuminuria, œdema, marked elevation of blood pressure, and generalised convulsions. Cases with convulsions are almost invariably labelled as eclampsia, and though it is well recognised that œdema may be absent in such cases, eclampsia can never occur without some of the phenomena—albuminuria, œdema, or hypertension—which are usually accepted as placing a case in the category of renal disease.

It has often been suggested that eclampsia is merely uræmia occurring in the course of a complicated pregnancy, and if we accept the thesis that uræmia is a term covering several different conditions, there seems no sufficient ground for excluding eclampsia from the definition. It is, at any rate, sure that eclampsia is merely a name given by obstetricians to a clinical syndrome in which certain manifestations due to a renal disorder, and severe generalised convulsions, make their appearance at some time close to the moment of parturition.

Certain observers, such as Lubarsch and Fahr, and more recently Berkeley, Dodds, and Walker, have held that eclampsia differs from ordinary renal disease in that there is an important element of hepatic disorder always present, but though it is accepted that many eclamptic cases give evidence of a disturbance of the liver, the recent observations of Cruickshank, Hewitt, and Couper on 69 cases suggest that such signs of hepatic disturbances are relatively uncommon in this syndrome.

Whether cases exhibiting jaundice or other signs of hepatic disorder can properly be included under the heading of eclampsia, or whether, on the contrary, the term eclampsia should be reserved solely for such cases, it seems abundantly clear that at the present date we must continue to class together all the cases in which convulsions are combined with certain renal signs during the period of parturition, and when for the purpose of our present inquiry we ask what the relation of this state is to increased blood pressure, we must accept it as established that an elevation of the blood pressure is almost invariably present.

Examination of a large series of cases, such as that of Cruickshank and his co-workers, shows that this increase in blood pressure is not usually excessive, the systolic pressure being generally in the region of 160 mm., reaching 200 in perhaps 20 per cent. of cases, and being below 140 in a further 20 per cent. In general it appears to be established that the prognosis becomes worse in cases where hypertension is most marked. When these cases are examined after parturition it is found that in the majority of them the blood pressure quickly falls to normal, but the elevation may persist or even increase, and I have attending my out-patients' at Middlesex Hospital several patients in whom hyperpiesis has persisted for years after this complication of pregnancy.

Turning now to the renal complications of pregnancy in which convulsions do not occur, we may first of all exclude a large group in whom the presence of albumin in small amounts in the urine is the sole evidence of any abnormality, but having done this there remains a very numerous class in which albuminuria is accompanied by œdema in varying degree, often with headache or vomiting or cerebral symptoms indicative of a severe general disturbance. It has become customary to classify some of these cases as "pre-eclamptic toxæmia" and others as "nephritic toxæmia," but after prolonged and careful investigation of many of such cases, and a study of the literature dealing with them, I have never been able to discover any logical means by which an individual case can be placed in one or other of these groups. It rather appears that the method adopted is for the surgeon in charge of the case to call a case pre-eclamptic toxæmia when he has the impression that without treatment convulsions would have occurred, and to class it as nephritic toxæmia if a history of scarlet fever or the appearance of blood and casts in the urine, or some other manifestation, gives him the impression that the strain of the disease has fallen with particular acuity upon the kidney. In the same way it must be agreed that in series into which prolonged investigation has been made, such as that incorporated in the report to the Medical Research Council to which I have made reference above, one often finds classified as simple albuminuria cases in which œdema and sometimes a definite elevation of blood pressure was present and which, therefore, would appear to fall more properly into one of the other groups. If we look upon these cases as a whole, we find that some elevation of the blood pressure is present in the majority of them, if the cases where albuminuria is the only symptom are excluded, and in the group, which, to my mind for purely arbitrary reasons, has been labelled nephritic toxæmia the average blood pressure is very little, if at all, lower than in those with eclampsia. Indeed, it may be said that examination of the reports on such cases leaves the impression that a high blood pressure is one of the chief determining factors which leads to the inclusion of a case in the so-called "nephritic" group.

One must conclude that a moderate degree of hypertension is found in a high proportion of these cases, also that though such elevation of the blood

pressure is frequently transient there is a definite residuum of cases in whom it persists for years afterwards, and possibly for ever.

But a far more important problem arises at this point, it is this: Does the hypertension seen in the renal complications of pregnancy occur as a result of the complication, or was it present prior to the occurrence of any other symptom? To this all-important question I am unable to find a reply. I have the impression, and I think it is a general impression, that the hyperpiesia does not occur until albuminuria or some other evidence of renal involvement is present. But it is quite possible that it occurs at an earlier date, and it seems certain that in some proportion of these cases it was present even before pregnancy. We can draw no final conclusions from these cases until we are better informed concerning this point, and particularly it seems to me that the answer to this question will supply us with the all-important information as to whether hyperpiesis persisting after pregnancy is the result of a renal complication of pregnancy or is to be regarded as a separate disease.

The Term "Toxæmia of Pregnancy."

I have long felt that as physicians we owe a debt to the obstetric surgeons and their assistants who have made such careful inquiry into these problems, even though they remain in many ways mysterious. It is, indeed, unquestionable that we already possess many data from these cases which we should be glad to have in the case of similar purely medical ailments, and there is much to be said in favour of the attitude which persists in classifying such cases as "toxæmia of pregnancy," for that term tends to keep in view the general nature of the disease or diseases, in which clearly the renal manifestations are but a part of the whole.

The morbid anatomy of the kidney tends to show that the lesions present are of an almost purely degenerative character and the almost constant presence of œdema is—if the conclusions of my previous lectures are to be accepted—evidence of the coexistence of an important extra-renal factor It is perhaps of interest in this connexion to note that Petersen and Lash have observed an increased permeability of the capillaries in pregnancy, pointing to an important extra-renal factor always present in this state.

It is not my intention to-day to enter into any discussion of the pathogenesis of the renal complications of pregnancy. It seems, indeed, far too soon to endeavour to draw any conclusions on this subject, but we should, I think, bear in mind that Volhard and other German workers believe that a general spastic contraction of the arterioles is the most important factor in the production of all the manifestations of such disease. Volhard believes that in eclampsia and in convulsive uræmia generally, there is an œdema of the brain due to contraction of the arterioles, that such œdema is followed by compression of the capillaries and cerebral anæmia, and that this is the cardinal cause of the fits.

It may be that as Elwyn has suggested, following the ideas of Gaskell, an increased irritability is physiologically present in the pregnant uterus, and that such increased irritability is part of a similar condition present throughout the vegetative nervous system, and that hence there is an increasing tendency to vasoconstriction throughout the course of pregnancy.

"The possibility for the occurrence of arterio-spastic contraction lasts as long as these mechanisms retain their increased irritability. This is probably until the uterus is completely involuted. For this reason eclampsia may still occur in the puerperium."

Looking back over this subject, the following conclusions may be drawn:—

1. A moderate degree of hyperpiesis is found in about half the cases where pregnancy is complicated by albuminuria and œdema.
2. When eclamptic convulsions occur such hyperpiesis is present in a still larger proportion of cases.
3. The degree of hyperpiesis is some index of the severity of the case.
4. The raised blood pressure does not persist in the majority of cases which recover.
5. There is insufficient evidence as to whether the hyperpiesis appears before or simultaneously with the albuminuria and œdema.
6. It is not possible to form an opinion as to whether the hyperpiesis is the cause or the effect of such renal lesions as occur.

(C) Acute Glomerulo-nephritis.

We now come to acute nephritis of the type that occurs as a complication of scarlatina and other infections. There is to-day almost a consensus of opinion that such acute nephritis takes one of two forms: (*a*) that which is known as the focal type, in which the inflammation of the glomeruli is limited to a certain proportion of the total kidney substance; and (*b*) a diffuse type in which all the glomeruli are uniformly involved with a varying degree of inflammation.

The former type is probably more frequently associated with diseases such as acute tonsillitis and pharyngitis, and is frequently characterised by a considerable degree of hæmaturia. Owing to the limitations of the amount of kidney substance involved, there is seldom any noticeable reduction in renal function, and the course of the disease tends to be benign. Œdema and hypertension are probably always absent.

In sharp contrast to this, the acute diffuse glomerulo-nephritis usually makes its appearance in the second or third week of an infectious fever, and though the disease is of a far more serious character hæmaturia is seldom marked and streptococci, which are usually to be found readily in the urine of patients of the previous class, can seldom be demonstrated in this disease. It again contrasts with the focal type in that œdema is usually present to some degree, and in that an elevation of the blood pressure is frequently remarked.

It is regrettable that precise data concerning our immediate problem are even more difficult to obtain in these conditions than in the case of the renal complications of pregnancy. This is probably due in a large measure to the fact that these cases are usually segregated in fever hospitals. One would imagine that this very fact might favour the acquisition of scientific information, but unhappily this is not so at present.

In any case, the information concerning the incidence of hyperpiesis in acute glomerulo-nephritis is to-day lamentably inadequate. Christian and O'Hare state that in only 19 of 55 successive cases of this disease was there any increase in the systolic pressure, and in all cases in whom that pressure exceeded 180 or more they consider that a chronic nephritis had been present prior to the acute attack.

So far as it is possible to draw conclusions, one may perhaps say that:—

1. A moderate degree of hyperpiesis is found in a small proportion of cases of acute diffuse nephritis; it is by no means an invariable feature.
2. Œdema is probably an accompaniment of all such cases.
3. The blood pressure returns to normal in the majority after the subsidence of the acute attack.
4. Cases with a greater degree of hyperpiesis are probably those in which this condition was present prior to the acute attack, and in such cases high blood pressure will persist.

Chronic Diffuse Glomerulo-nephritis.

It is when we consider the chronic state into which many of these cases of acute nephritis pass that we enter into the most mysterious portion of the whole of the difficult subject of nephritis. There can be no question but that recurrent attacks of acute inflammation of the renal tissues are seen in an appreciable number of such cases, and it is usual for

such attacks to be accompanied by œdema and for the degree of hypertension to increase with each successive attack. In the course of time a permanent reduction in renal function becomes apparent. Polyuria is present because the concentrating power of the kidney is lost, and from this the patient passes to a stage of uncompensated renal failure, when nitrogen retention in the blood is present.

In the course of this evolution it is usual for a progressive elevation of the blood pressure to occur, but the figures seldom reach the height seen in the primary hyperpiesia which produces granular kidney as a terminal event. But although these cases of chronic glomerulo-nephritis usually exhibit progressive hypertension with cardiac hypertrophy, it must be recognised that there are certain rare exceptions. Thus Jores, Foster, Bouchut, and Bannick have all reported cases of well-marked chronic glomerular nephritis in which there was typical nitrogen retention, and, following death from uræmia, the kidneys were of typical fibrotic appearance, although there had never been elevation of the blood pressure during life and the heart was not enlarged.

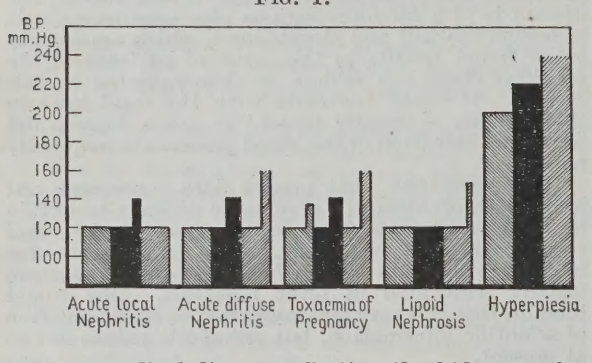
We must, I think, conclude that :—

1. In cases where diffuse glomerulo-nephritis becomes chronic there is usually a progressive elevation of the blood pressure.

2. This hyperpiesis very seldom, if ever, reaches the high degree found in cases of "essential hypertension" and is occasionally completely absent.

I have endeavoured in the diagram (Fig. 1) to set out the nature and incidence of hypertension in the

FIG. 1.



common medical diseases affecting the kidney as far as one can form an opinion in the light of our present incomplete knowledge. For each main group I have drawn three columns of which the central one represents the blood pressure when the case comes under observation as an example of "nephritis," the columns in the left of this being the tension before this period and the right hand column the subsequent finding. The relative breadth of each column shows roughly in what proportion of cases the blood pressure is abnormally affected. Thus you will note that I have tried to indicate that in acute diffuse nephritis a transient hyperpiesis, affecting a moderate proportion during the attack, becomes a permanent hyperpiesis in a few cases. In the toxæmias of pregnancy such cases probably include some who exhibited hypertension before ever their pregnancy occurred. In lipoid nephrosis, hyperpiesis is so rare as to make the accuracy of the original diagnosis doubtful, whilst in the group which is usually labelled chronic interstitial nephritis, the hyperpiesia long preceded the renal manifestations.

CAN RENAL LESIONS CAUSE HYPERPIESIS?

A question of paramount importance now presents itself. It is this: Have we evidence on which we can affirm that a renal lesion can by itself produce an elevation of the blood pressure?

On physiological grounds one would expect the answer to be "yes." A certain pressure in the renal arterioles is a necessity if the glomerular filter is to remain effective, and when a number of glomeruli are incapacitated by disease an increased pressure would seem to be needed if the remainder are to carry on their work effectively.

It must, of course, be borne in mind that like other essential organs, the kidney possesses considerable powers of reserve. The classical experiments of Rose Bradford demonstrated that it was necessary to remove three-quarters of the total kidney substance before renal failure was established, and the repetition of these experiments by Janeway and others has tended to show that such successive reductions in the renal tissue are accompanied by a moderate elevation of the blood pressure.

The question cannot be accepted as finally settled even to-day, for Anderson failed to produce hypertension by similar experiments on rabbits even when large amounts of the kidney substance had been removed, and permanent nitrogen retention with slow death had been produced. By giving high protein diets to such animals this observer was able to produce nitrogen retention even when as small an amount as 12 per cent. of the total kidney substance had been removed, but again there was no hypertension though extensive atheroma of the aorta was produced in many of the animals. We may perhaps assume that further evidence produced by ingenious experiments will finally demonstrate that destruction of sufficient renal tissue is followed by a rise in the blood pressure; the balance of evidence is probably in this direction even to-day.

But even if this be the fact, we are still far from knowing the mechanisms by which such hyperpiesis is produced. I will not detain you by going into details concerning the many negative observations which characterise the chemical side of such investigations; suffice it to say, that none of the nitrogenous constituents of the urine has been shown to increase the blood pressure when present in excess in the blood, and many hundreds of observations testify to the fact that such things as urea, uric acid, creatinin, chlorides, phosphates, and so on can exist in excess in the blood stream for months or years without producing high blood pressure.

Cholesterol has been the subject of particular inquiry in this respect, but it is now generally agreed that though atheroma and other degenerative changes in the arteries can be produced by cholesterol, excess of cholesterol in the blood is more characteristic of cases of lipoid nephrosis with a normal blood pressure than of cases of renal failure with hypertension.

The search for a pressor substance in the kidney itself is a chapter in the history of medical investigation which so far tells a tale of failure. Investigation, however, continues, and it seems likely that the future will demonstrate that hypertension in some degree can be a direct result of nephritis and renal disease. We must, however, recognise that the evidence points to such hypertension being only slight in degree and that when any patient exhibits an extreme degree of hyperpiesis a systolic pressure, for example, in the region of 200 or higher, that fact is strong evidence for the existence of an extra-renal factor; and, indeed, in any such case the probability will be that such renal damage as may be present is the result and not the cause of the morbid vascular change to which the high blood pressure is due.

THE NEED FOR A WIDE OUTLOOK.

I would like to conclude these lectures on Some Problems of Nephritis by emphasising the necessity of considering nephritis from a very broad point of view. Few organs in the body are exposed to so many influences of potentially dangerous character as is the kidney. It is perpetually exposed to attack from bacteria which may invade the blood stream, or which may with equal danger reach it via lymphatics or the ureter. It is also called upon to play an important part not only in the excretion of waste products from the blood, but in the adjustment of the proper balance between acid and alkali in the blood-stream and one has only to examine the work

of Nuzum or a score of other observers to realise how readily damage can be produced by chemical products from even normal foodstuffs when these are given in excess.

My friends, Prof. E. C. Dodds and Dr. S. Baker, working in the laboratories of the Middlesex Hospital, were, some years ago, able to establish the fact that an injection of hæmoglobin in the blood stream of a rabbit would produce fatal renal damage if the animal's urine was acid, but was innocuous when such urine was in an alkaline condition. Here again is an illustration of how apparently slight chemical factors may influence the pathology of the kidney.

L. S. Debenham, J. Joffe, and M. S. Pembrey demonstrated to what a striking degree the renal secretion can be affected by influences such as heat and cold directed to the skin surface of the body. So delicate is this response of the kidney to vasomotor changes in the capillaries of the skin that it is very probable that a so-called nephritis may accompany excessive stimuli or actual disease of very distant parts of the circulatory system.

I show you here two pictures (Figs. 2 and 3) which at first may appear entirely irrelevant to our subject, but this is not so, for they reveal to you the conditions prevalent amongst the patients on whom Bright made his famous observations. The pictures are from George Cruikshank's famous series entitled "The Bottle," and there can be little doubt that they express in dramatic, but not exaggerated form, the extent to which alcoholism prevailed in this country at that period. It seems to me not unlikely that this ætiological factor explains to some extent the differences shown in Bright's "Reports of Medical Cases" from the pictures of nephritis which we are accustomed to see at the present day. This impression is strengthened by reading the text of these reports, a typical example being that of—

FIG. 2.

From a print by George Cruikshank in his series entitled "The Bottle." "Between the fine flaring gin palace and the low dirty beer shop, the boy thief squanders and gambles away his ill-gotten gains."

"Henry Izod, a Smithfield drover, a man of very irregular habits who had long been accustomed to getting intoxicated with porter, but had only taken spirits to excess for the last year, during which time he had generally lodged at a public-house and had been exposed in his work to the inclemency of the weather, seldom wearing a hat, never changing his clothes when wet, and being almost daily intoxicated."

Surely it is not unnatural to suppose that a dietetic exuberance of this degree may have played an important part in the pathology of that epoch, and I make the suggestion to remind you of the wide view we must take of all cases to which the narrow definition of nephritis is applied. For such chemical influences as may affect the kidney will also throw a load upon extra-renal tissues, and especially on those of the circulatory system, and I have tried to show you how the study of uræmia involves inquiry into very broad biochemical principles, how œdema is probably always an index of damage to tissues outside the kidney, and how hyperpiesia is more often a cause than an effect of nephritis.

In a famous lecture Sir William Gull spoke as follows:—

"It is always dangerous to rest under a narrow pathology; and I believe that it is a narrow pathology which is satisfied with what you now see before you on this table. In this glass you see a large hypertrophied heart and a very contracted

FIG. 3.

Another print from "The Bottle." "Neglected by their parents, educated only in the streets, and falling into the hands of wretches, who live upon the vices of others, they are led to the gin shop, to drink at that fountain which nourishes every species of crime."

kidney. This specimen is classical. It was, I believe, put up under Dr. Bright's own direction and with a view to showing that the wasting of the kidney is the cause of the thickening of the heart. I cannot but look upon it with veneration, but not with conviction. I think with all deference to so great an authority that the systemic capillaries, and, had it been possible, the entire man, should have been included in this vase, together with the heart and the kidneys, and then we should have had, I believe, a truer view of the causation of the cardiac hypertrophy and of the disease of the kidney."

His words applied to cases of hyperpiesia with secondary destruction of the kidney, but the same broad outlook should be employed when regarding every type of renal disease.

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TWO STUDIES OF STREPTOCOCCAL INFECTIONS.

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I.

HÆMOLYTIC STREPTOCOCCAL INFECTIONS IN THE RABBIT.

MOST workers would probably agree that the rabbit is the most suitable laboratory animal for the investigation of streptococcal problems. In the rabbit it has been found that the pathogenic effects produced by strains of hæmolytic streptococci from scarlatinal and non-scarlatinal conditions do not appear to depend on the origin of the strain in terms of human disease. If small quantities of any of these streptococci are given intradermally, superficial streptococcal abscesses are produced; if larger quantities are injected or a more virulent culture is used, a spreading condition is produced which may be compared with cellulitis or erysipelas. We have found that the erysipelas-like lesions described by Birkhaug as characteristic of erysipelas strains can be produced by strains of hæmolytic streptococci of the most diverse origin. There has been no evidence of specific blocking of these skin reactions with any serum, although a neutralisation effect was obtained with antierysipelas sera which were kindly sent to us by Dr. Birkhaug or which we had ourselves prepared by Birkhaug's methods. The results with these sera were, however, in the end inconclusive, for interference with the development of skin reactions was frequently induced to the same extent by scarlet fever antitoxic and antibacterial sera, diphtheria antitoxin, tetanus antitoxin, and normal horse serum. The effect, therefore, could not be ascribed to a specific antibody.

Fatal Septicæmia due to the Streptococcus of Scarlet Fever Controlled by Streptococcal Antitoxic Serum.

In previous papers it has been shown that many strains of hæmolytic streptococci from cases of scarlet fever are lethal for rabbits if given in suitable doses, and that this effect can be controlled by the intravenous injection, 4 to 6 hours before the culture, of streptococcal antitoxic serum, but not of sera other than streptococcal (Parish and Okell, 1927). Thus, young broth cultures of the scarlet fever streptococcus (S.F.1), given intravenously, kill rabbits with considerable regularity, the majority dying of acute septicæmia within a few days. Of 120 rabbits which received normal horse serum, concentrated diphtheria or concentrated tetanus antitoxin 4 to 6 hours before the injection of culture, only 20 per cent. survived for 48 hours and 6 per cent. for 6 days (Table I.).

TABLE I.

Rabbits injected intravenously with 10 c.cm. of 20-hour digest broth cultures of the scarlet fever streptococcus (S.F. 1). Antitoxic serum given intravenously 4 to 6 hours previously.

Serum.	Total rabbits.	Percent. living six days after injection of serum. C.cm.			
		5 or more.	1·0	0·25	0·1
Normal horse	120	6	..	..	..
Concentrated diphtheria					
„ tetanus					
Unconcentrated scarlet fever (early*)—Batch "P"	9	66	0	..	..
Unconcentrated scarlet fever (later*)—Batch "Q"	15	77	33	..	..
Concentrated scarlet fever—					
Batch "R"	15	88	66	33	..
Batch "S"	12	100	100	66	33
Batch "T"	9	..	100	100	33
Unconcentrated pyogenes	26	27	..	..	..
Concentrated „	6	66	..	..	..
Unconcentrated puerperal	32	56	..	..	..
Concentrated „	13	54	..	..	..
Unconcentrated erysipelas	14	21	..	..	..
Concentrated „	10	40	..	..	..

* Stage of immunisation.

Unconcentrated scarlet fever antitoxin in doses of 5 c.cm. or less, and concentrated† antitoxins of average potency in doses of 0·25 c.cm. to 1 c.cm., given intravenously, afford considerable protection against the acute phases of the septicæmia, although the majority of rabbits develop a subacute infection towards the end of the first week or later. This is characterised mainly by arthritic lesions from which hæmolytic streptococci can readily be recovered. Protection has never been obtained against this phase of the infection with any antitoxic or antibacterial serum we have used.

Many antistreptococcal sera, other than scarlatinal, prepared by the immunisation of horses with filtrates of hæmolytic streptococci have some protective properties in doses of 5 c.cm. or more. Experiments have been carried out with 14 unconcentrated and 4 concentrated antitoxins prepared from pyogenes, puerperal fever, and erysipelas strains. The percentages of rabbits which survived for 6 days ranged from 21 per cent. of those injected with unconcentrated erysipelas to 66 per cent. of those injected with

† By "concentrated" serum is meant serum from which as much as possible of the albumin and euglobulin has been removed by the well-known ammonium sulphate method. It usually represents a three- to four-fold concentration of the protective antibody.

concentrated pyogenes antitoxins. The protection given by the various sera correspond roughly to the amount of streptococcal antibody which they might be expected to contain from collateral evidence. The filtrates which were prepared from pyogenes, puerperal fever, and erysipelas strains, and which were used for the immunisation of horses, were weaker than those from the scarlet fever streptococcus (S.F.1) as judged by skin reactions in human subjects. It should be emphasised here that we have never been able to demonstrate in any type of experiment that the serum of rabbits highly immunised against washed (toxin free) streptococci, and often rich in agglutinins, has any protective properties. This probably explains the slight protective value shown by most of the older types of horse serum, used in the treatment of human streptococcal infections, which was usually prepared in response to injections of the bacillary bodies.

TABLE II.—*Prevention of Deaths due to Toxin by Antitoxin.*

Rabbits injected intravenously with 30 to 40 c.cm. of 20-hour culture filtrates of scarlet fever streptococcus (S.F. 1). pH 7·6: no preservative. Concentrated antitoxic serum given 4 to 6 hours previously (amounts up to 5 c.cm. intravenously, remainder intraperitoneally.)

Serum.—D.T. = diphtheria or tetanus; S.f. = scarlet fever; Py. = pyogenes; P. = puerperal; E. = erysipelas.

Serum.	Total rabbits.	Percent. living six days after inject. of serum. C.cm. 15	10	5	1	Serum.	Total rabbits.	Percent. living six days after inject. of serum. C.cm. 15	10	5	1
D.T.	30	3	..	..	..	P. ..	3	66	..	..	..
S.f..	3	100	..	..	..		3	..	33	..	..
	3	..	66	..	..		6	..	..	50	..
	12	..	..	75	..	E. ..	3	33	..	..	..
	3	..	..	..	33		6	..	33	..	..
Py...	3	..	100	..	..		3	..	..	0	..
	3	..	..	0	..						
	3	..	..	..	33						

TABLE III.

Rabbits injected intravenously with serum 4 to 6 hours before intravenous injection of culture.

Source of culture.	Total rabbits.	Percentage of rabbits living three days (in brackets six days). UNPROTECTED. No serum or normal horse serum or concentrated diphtheria serum.	PROTECTED: Streptococcus antitoxic serum. Concentrated scarlet fever 5 c.cm.	Concentrated puerperal 5 c.cm.	Unconcentrated pyogenes 10 to 15 c.cm.	Unconcentrated erysipelas 10 to 15 c.cm.
Tonsillitis	24	0	77 (44)	..	33 (16)	..
	9	0	100 (33)	..	33 (0)	..
	6	0	66 (0)	..	..	..
Lymphangitis ..	9	0	100 (33)	..	66 (33)	..
Fatal septicæmia ..	12	0	33 (33)	..	66 (66)	..
Severe septicæmia ..	15	0	66 (50)	..	..	..
Endocarditis.. ..	12	0	83 (66)	..	..	..
Fatal endocarditis ..	12	0	33 (0)	33 (0)	0	..
Puerperal fever—						
Uterus	25	10 (0)	83 (66)	16 (16)	0 (conc. 5 c.cm.)	..
,, ...	25	0	100 (100)	50 (50)	33 (33) (conc. 5c.cm.)	..
Blood	11	0	100 (33)	100 (33)	..	..
,, ...	21	17 (0)	83 (66)	66 (50)	66 (0) (conc. 10c.cm.)	..
Uterus	11	0	100 (100)	33 (33)	..	..
Blood	23	17 (17)	100 (100)	66 (66)	66 (0) (conc. 10c.cm.)	..
Erysipelas	36	8 (8)	70 (30)	..	..	77 (22)
	12	0	100 (33)	..	0	0
	12	0	100 (100)	66 (0)	..	66 (33)
	6	0	100 (100)	..	..	..
Total..	281					

Deaths due to Scarlet Fever Toxin Prevented by Streptococcal Antitoxin.

Streptococcal antitoxic sera protect rabbits from deaths due not only to culture but also to scarlet fever toxin (Table II.). Although rabbits readily succumb to 5 to 10 c.cm. of young digest broth cultures of many strains of scarlet fever streptococcus, much larger doses—20 to 40 c.cm. given intravenously—of culture filtrates (without preservative), containing at least 15,000 human skin test doses per c.cm., are necessary to ensure deaths within 24 hours. Control injections of 60 c.cm. of the tryptic digest broth used for the preparation of toxin produced only temporary ill-effects. The toxin is almost completely inactivated by heating to 95–100° C. for 3 hours; 5 of 7 rabbits injected with 40 c.cm. of the heated filtrate survived. When scarlet fever or other streptococcal antitoxin is given intravenously 4 to 6 hours before the injections of toxin the majority of rabbits can be protected, but, owing no doubt to the fact that the test animal is relatively insensitive to the toxin, the results obtained are so irregular that it has not been found possible to use this method as a practical means of titrating antitoxin in the laboratory. From Table II. it will be seen that, as a group, the concentrated scarlet fever antitoxins afforded better protection than the various puerperal, pyogenes, and erysipelas antitoxins which were available for the experiments. Concentrated diphtheria antitoxin and concentrated tetanus antitoxin had no protective value.

The experiments which have so far been described demonstrate that sera prepared by immunising horses with filtrates of cultures of hæmolytic streptococci

TABLE IV.

Rabbits injected with serum intravenously 4 to 6 hours before intravenous injection of hæmolytic streptococci from conditions other than scarlet fever. (Serum dose—5 c.cm. of concentrated or 15 c.cm. of unconcentrated antitoxin.)

——	Total rabbits.	Percent. survived— Three days.	Six days.
Unprotected.			
No serum	14	0	0
Normal horse serum	24	4·2	4·2
Conc. diphtheria antitoxin ..	59	5·1	1·7
Total	97	4·1	2·1
Protected.			
Scarlet fever antitoxin ..	90	81·1	55·5
Erysipelas antitoxin	20	60·0	20·0
Puerperal fever antitoxin ..	36	52·7	36·1
Pyogenes antitoxin	38	42·1	18·4
Total	184	65·2	40·2

from scarlatinal and non-scarlatinal conditions afford some protection against living cultures of scarlet fever streptococci and their toxins.

Protective Action of Streptococcal Antitoxin against Fatal Septicæmia due to Various Hæmolytic Streptococci.

The acute fatal septicæmias produced in rabbits by strains from cases of acute infectious pharyngitis, suppurative lymphangitis, malignant endocarditis, puerperal fever, erysipelas, &c., can be controlled by scarlet fever antitoxin, and by serum made from toxins from other strains of hæmolytic streptococci. In these experiments the infecting dose for the rabbit ranged from 1 to 20 c.cm. of 9 to 20 hours tryptic digest broth cultures of hæmolytic streptococci from various sources. The dose selected, which was almost always from 1 to 5 c.cm., depended on the virulence of the organisms, and probably represented in most experiments from 2 to 5 times the "minimal lethal dose" for the majority of animals. Serum was given in doses of 5 to 15 c.cm., usually 5 c.cm. in the case of concentrated antitoxins, and 15 c.cm. of unconcentrated antitoxins. It will be seen from Table III. that scarlet fever, and to a lesser extent other streptococcal antitoxic sera, have considerable protective effect against hæmolytic streptococci of diverse origin, the acute septicæmia which follows the intravenous inoculation of the culture being modified, as in the first series of experiments, into a subacute infection of which arthritis is the most prominent feature. Nearly all the strains have been tested for their ability to produce streptococcal toxin as demonstrated by a Dick test on human subjects, and have been proved to be capable of so doing to a greater or lesser degree.

In Table IV. the results of experiments recorded in Table III. are summarised with reference to the relative protection given by scarlet fever and other streptococcal antitoxins. As shown by the percentages of the total rabbits injected which survived for 3 and for 6 days, scarlet fever antitoxin was of greater value than any of the various samples of erysipelas, puerperal fever, and pyogenes antitoxins which were used for this work.

Summary.

1. Hæmolytic streptococci obtained from various sources—scarlet fever, erysipelas, cellulitis, puerperal fever, &c.—produce similar lesions of a pyogenic nature when injected intradermally in rabbits. We have been unable to demonstrate that sera prepared against either toxin or bacterial bodies contain a specific antibody which will prevent the development of the pyogenic skin reactions.

2. Scarlet fever and other streptococcal antitoxins protect rabbits from the acute phases of the septicæmia following the intravenous injection of the scarlet fever streptococcus, and from deaths due to scarlet fever toxin.

3. They have also a significant protective action against the septicæmia due to hæmolytic streptococci from conditions other than scarlet fever.

4. All hæmolytic streptococci appear to be identical in their "toxic" action. There is strong evidence that the protective action of streptococcal antitoxic sera is due to one antitoxin, which has been produced in horses in varying degree in response to immunisation with toxic filtrates of varying potency.

References.—Birkhaug, K. E.: Bull. Johns Hopkins Hosp., 1925, xxxvii., 307. Parish, H. J., and Okell, C. C., THE LANCET, 1927, i., 71; Jour. Path. and Bact., 1927, xxx., 521.

II.

THE RELATIONSHIP OF SCARLET FEVER TO OTHER STREPTOCOCCAL INFECTIONS.

BY C. C. OKELL AND H. J. PARISH.

IN the preceding communication attention was drawn to experiments in rabbits which suggest that hæmolytic streptococci from various human diseases may give rise to clinical conditions in the rabbit, independently of the source of origin of the strain, but depending upon its virulence, the site of inoculation, and the state of immunity of the host, and that such effects as are neutralisable can be neutralised by one antitoxin. In this paper we wish to elaborate this conception and discuss some of its clinical implications.

The Essential Similarity of Hæmolytic Streptococci from Different Sources.

To the hæmolytic streptococci are ascribed certain so-called "specific" diseases such as scarlet fever and erysipelas, and conditions such as cellulitis, puerperal fever, and acute pharyngitis which are not usually looked upon as specific. Many unsuccessful attempts have been made to classify the hæmolytic streptococci; morphologically and on biochemical grounds they are indistinguishable, and it is becoming increasingly obvious that they do not lend themselves to being classified in terms of the diseases they produce. Work on the agglutination reaction has elicited many interesting facts, some of which may have a practical application, but, as in the case of the diphtheria and tetanus bacilli, no evidence has been produced so far to show that there is any subclassification of taxonomic importance.

It has been shown that the specific signs of scarlet fever, the so-called "scarlatinoid syndrome"—rash, albuminuria, and even hæmaturia—can be produced in susceptible human subjects as the result of an injection of sterile scarlet fever toxin. If we take the symptoms due to the toxin away from scarlet fever we are left with a well-known clinical condition—viz., acute infectious streptococcal angina. Many cases of sore-throat without rash simulate scarlet fever in their infectiousness, severity, and complications. Some of these are found to propagate scarlet fever, and can be called "scarlet fever sine eruptione." As a rule, however, they propagate sore-throat and not scarlet fever, yet the streptococcus that causes them has all the essential properties of a scarlet fever streptococcus. This is illustrated by the following case.

A child caught an acute pharyngitis from a case of sore-throat. The onset was sudden with high fever, frequent pulse, and furred tongue; the infection spread rapidly and relatively painlessly to both middle ears. The child gave severe sore-throat to two individuals; no rash, however, appeared in any case. An almost pure culture of hæmolytic streptococci grew from the swabs of all three cases. The interesting point in this outbreak was that all the streptococci were fairly good producers of Dick toxin in vitro. The clinical condition was scarlet fever without scarlatinal toxæmia; a toxin was obtained from the streptococci which, had it been injected into the patient, would have produced a disease clinically identical with scarlet fever. The potentiality for producing the complete scarlet fever syndrome was there, but for some reason the particular strain of streptococcus, while a reasonably good toxin producer in vitro, could not produce any significant quantity in vivo.

The production of Dick toxin is by no means a peculiarity of scarlet fever strains, and results are rapidly accumulating which suggest that one toxic product can be obtained to a greater or less degree from many, if not all, human hæmolytic streptococci, which is indistinguishable from Dick toxin by the usual tests. A few workers—e.g., Kirkbride and Wheeler, 1925—have suggested a plurality of toxins, but the results can probably be interpreted as due to quantitative rather than qualitative differences between the toxins. It must be admitted that, if scarlet fever is due to a specific streptococcus, the only means of identifying the streptococcus is by the impracticable test of its power to produce infectious scarlet fever with rash in susceptible human subjects.

We are led to the conclusion that the ordinary conceptions of the specificity of the streptococcal diseases are well worth challenging. We suggest the hypothesis that the various streptococcal infections are all due to essentially the same species of bacteria. Their pathogenic effect varies with certain accidental factors, mainly quantitative, such as invasiveness and toxigenicity on the part of the strain and local or

general susceptibility on the part of the host. We thus attempt to revive and extend views often held in the past and to ascribe the differences in the human diseases due to hæmolytic streptococci to variables which, though little understood, are at least universally allowed to both parasite and host. We do not wish to minimise the clinical nor even the epidemiological differences between the streptococcal diseases. Our purpose is rather to explain a maximum number of facts on a minimum number of suppositions; in other words, to formulate a working hypothesis which will serve as a basis for further work and at the same time suggest a rational therapy of the streptococcal diseases. In the following table an attempt is made to apply these ideas to some of the clinical entities due to infection with the hæmolytic streptococcus. The sign + in the first column indicates that the streptococcus produces enough toxin to produce a rash if the patient is fully susceptible to Dick toxin. By ± is meant that, though the streptococcus probably produces a certain amount of toxin in vivo, it does not produce sufficient to give rise to obvious clinical signs of scarlatinal toxæmia. The degree of infectiousness is roughly indicated in the second column.

Toxigenicity of streptococcus in vivo.	Infectiousness.	Location of infection.	Susceptibility of patient to Dick toxin.	Disease.
+	++	Throat.	+	Scarlet fever.
+	++	,,	−	Acute infectious pharyngitis.
±	++	,,	+ or −	
±	+	Skin.	+ or −	Erysipelas; cellulitis.
+	+	Uterus.	+	Puerperal fever with rash.
+	+	,,	−	Puerperal fever without rash.
±	+	,,	+ or −	

Under a "unitarian" theory the relationship between puerperal fever and puerperal scarlet fever becomes more defined. The known clinical entities can be divided into:—

1. Primary faucial infection with rash and with secondary infection of the uterus.

2. Primary infection of the uterus with a streptococcus of any origin which is markedly toxigenic in the uterus—usually without secondary faucial involvement.

It may be mentioned that all the puerperal strains we have examined have been able to produce Dick toxin in vitro.

According to such a view a streptococcus from a scarlet fever case might, under suitable conditions, produce erysipelas or puerperal fever or cellulitis, and vice versa a hæmolytic streptococcus associated with any disease, if it underwent the requisite modification in virulence and toxigenicity, might be conceived as producing scarlet fever and maintaining this capacity during a considerable epidemic period. It is by no means unusual for an epidemic of scarlet fever to start with atypical cases, slowly to attain to normal clinical pathogenicity, and then to fade away again to atypical cases before it suffers extinction. Goodall and Washbourn in the 1896 edition of their "Manual of Infectious Diseases," p. 330, state:—

"When looked at from a clinical point of view, erysipelas appears at first sight to be a definite specific disease with characteristic symptoms. Nevertheless, there are many facts in connexion with its ætiology and pathology which show that it cannot be considered on quite the same footing as other specific fevers. The latter diseases are specific in the sense that they "breed true." A case of rubeola, for example, will in other persons give rise only to rubeola, and not to any other disease. A case of erysipelas is often the origin of erysipelas in other patients, but under certain circumstances it may cause an entirely different type of disease. Nurses suffering from erysipelas have conveyed puerperal fever to lying-in women, and medical men and nurses have contracted erysipelas when in attendance upon cases of puerperal fever. Moreover, a comparison of the registered deaths from erysipelas, puerperal fever, and pyæmia shows a sufficient correspondence to suggest that a relationship between these diseases exists. Again, a true cutaneous erysipelas cannot be sharply separated from phlegmonous erysipelas; nor can the latter disease be always separated from allied septic inflammations."

Several other authors have drawn attention to the close correspondence between the annual and seasonal incidences of the deaths from scarlet fever, erysipelas, and puerperal fever—e.g., Longstaff, 1891, Geddes, 1912 and 1926. McKinlay (1928), however, does not consider that this correspondence should be taken as supporting the idea of a common ætiological factor.

One more piece of evidence in favour of the unity of erysipelas streptococci with the other hæmolytic streptococci has recently been produced by the Dicks (1927), who have succeeded in producing experimental sore-throat by painting erysipelas streptococci on the throats of human volunteers.

As we pointed out in the previous paper, the results of our experiments in rabbits are at variance with those of Birkhaug. The erysipelas-like lesions in the rabbit are produced by all the strains we tried, whatever their origin. The peculiarity of the lesions was, so far as we could judge, entirely dependent on the virulence of the strain used and the layer of the skin that was injected.

One Identifiable Therapeutic Antibody to Hæmolytic Streptococci, generally known as Scarlet Fever Antitoxin.

It may be asked in what way this "unitarian" theory of the hæmolytic streptococci would modify existing views on the specific treatment of streptococcal disease. It has been our experience that all hæmolytic streptococci make the same toxin and that there is only one identifiable antibody—namely, what is generally known as scarlet fever antitoxin. The antitoxins produced in horses by injecting filtrates of streptococci from scarlet fever, puerperal fever, septic wounds, and other conditions, are qualitatively indistinguishable; but since scarlet fever strains are usually more active toxin producers in vitro, the highest grade sera are made in response to injections of their filtrates.

We ascribe the pathogenic activities of the hæmolytic streptococci to (1) their invasive function, over which the antitoxin has only a limited control; and (2) their toxigenic function, which the antitoxin has full power to neutralise. In our rabbit experiments we were unable to discover a specific method for neutralising the invasion of the skin with hæmolytic streptococci. In human subjects a limited anti-invasive property is shown by the fact that those who have been protected with the antitoxin do not take scarlet fever, and usually show no signs of infections with the streptococci, although it is believed that under certain conditions a sore-throat can be produced in Dick-immune persons (Stevens and Dochez, 1926; Nicholls, 1926; Kinloch, Smith, and Taylor, 1927). It is generally admitted that the septic complications of scarlet fever are very little affected by antitoxin treatment. In the rabbit the development of arthritis is uninfluenced by the injection of serum, even in large doses.

We would lay particular stress on the observation, already referred to in the first part of this paper, that an acute and rapidly fatal septicæmia in the rabbit may be converted by antitoxin into a subacute and relatively benign infection. It is probable that some degree of scarlatinal toxæmia is present in all streptococcal infections, although it may not be obvious clinically. For example, the salmon-pink lymphatics occurring in acute cellulitis are undoubtedly due to the removal of Dick toxin along these channels, and the appearance can be closely imitated by injections of sterile Dick toxin.

It seems obvious that, since so-called scarlet fever antitoxin is the only demonstrable therapeutic antibody to the whole group of hæmolytic streptococci, it should be used in all streptococcal infections,

particularly in acute septicæmias where there is a demand for serum treatment. We have already seen a limited number of clinical reports claiming that excellent results have followed treatment with scarlet fever serum in such conditions as puerperal septicæmia, septicæmia from wounds, and erysipelas. It is true that we cannot attach much importance to isolated clinical trials, but it is interesting to know that the evidence, such as it is, points to a common therapeutic antibody. One special application for the streptococcal antitoxin would be its use in the prophylactic treatment of wounds received while performing post-mortem examinations or septic surgical operations, in the hope of being able to parallel the rabbit effect and prevent the development of a fatal septicæmia.

Conclusions.

1. The hæmolytic streptococci of human origin represent one species of bacteria with common pathogenic potentialities. The balance of "phasic variations" on the part of the bacterium with local and general susceptibility on the part of the host would explain the apparently "specific" clinical conditions which result from infection.

2. A single antitoxin generally known as scarlet fever antitoxin corresponds with the single toxin. This may be depended upon to neutralise the specific toxæmia, and possibly has limited anti-invasive properties as well. It is the only streptococcal antibody with any acceptable experimental and therapeutic credentials, and should be given a more extensive trial in all severe streptococcal infections, particularly in general septicæmia. It is also suggested that it should be used in the prophylactic treatment of wounds received while performing post-mortem examinations or surgical operations on septic cases.

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THE TREATMENT OF COMPLETE RETENTION OF URINE OF PROSTATIC ORIGIN BY ELECTRO-COAGULATION.

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In the *Nederlandsch Tijdschrift voor Geneeskunde* of June 11th, 1927 (p. 3228), Dr. J. A. Weijtlandt describes a patient, 76 years of age, who suffered from prostatic disease, which had caused complete retention of urine within a very short time. Dr. Weijtlandt treated this man successfully by diathermy applied through McCarthy's cystoscope, and by so doing showed that this method of treatment deserves general attention as much for its thoroughness as for its simplicity and lack of danger. It is a treatment which will probably find considerable scope in the near future. I have therefore been encouraged to publish the results obtained by us at the Coolsingel Hospital in the treatment of prostatic diseases with electro-coagulation, although we are well aware of the fact that the time that has elapsed since we started this mode of treatment is altogether too short for us to regard the results obtained as final. The provisional outcome, however, is so encouraging that others might find it worth while to add this new application of the high-frequency current to their surgical arsenal. I do so the more readily since electro-coagulation in other departments of surgery has yielded such valuable results; for example, in the treatment of cancer of the tongue and the oral cavity, growths of the vocal cords, breast, womb, and many other organs. In reports of these treatments it has been asserted that: (1) operative damage could be considered of small importance in comparison with that of other surgical methods of treatment; (2) bleeding could be fully controlled; (3) scars, as the result of the coagulation, are supple; (4) a subsequent operation by the same or by a different method is not impossible.

By surgical diathermy with a blunt electrode tissue can be either heated en masse, even as far as boiling-point, after which the necrotic tissue is cast off spontaneously, or it can be severed with a thin needle.

Our treatment of the hypertrophic prostate aimed at the massive necrosis, as did Weijtlandt's, although the methods differ considerably in many respects. Up till now we have treated with electro-coagulation 52 patients suffering from disease of the prostate. Four have died; in 8 cases the treatment has not yet ended or no good results are evident; all the others benefited greatly by this simple treatment, inasmuch as all of them could urinate very well after the treatment. Originally we submitted to this treatment only those patients for whom operation with the scalpel was deemed too dangerous—e.g., very old people, those suffering from heart disease and diseases of the blood-vessels, and more especially those with deficient function of the kidneys.

The Operative Treatment.

We make it a rule in the Coolsingel Hospital that prior to all prostatectomies the function of the internal organs, and especially those of the kidneys, shall be improved as far as possible by preliminary treatment, and we consider that the lowering of the nitrogen percentage of the blood serum, which is nearly always greatly increased at the time of admission, is of the utmost importance.

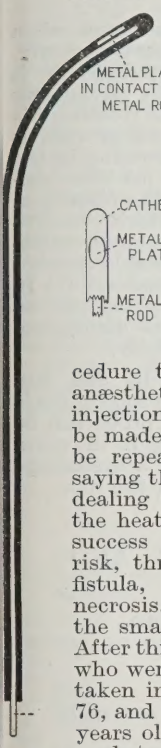
We insist on a sequence of treatments, such as irrigation of the bladder, self-containing catheter, diet, drugs and complete rest, until a series of consecutive tests have shown the urea percentage to be about 350 mg. per litre, or less, and not until then is prostatectomy considered justifiable. We have reason to be very satisfied with this mode of preliminary treatment, the operative mortality being 1 case in 50 prostatectomies. All the others came through the operation very well and were dismissed completely cured. A certain number of patients, however, can never be treated by operation, even after a prolonged sojourn in hospital. It is not to be wondered at that we looked for other means to give relief to those "stayers" with their total obstruction, to try to enable them to live outside the hospital without the self-retaining catheter. This means we think we have found in electro-coagulation with the diathermy apparatus.

In February, 1927, we had in our wards two patients 77 and 80 years old, who had been there for quite a number of months and who showed all the symptoms of a prostatic hypertrophy dating from a long time back. One of them had been operated upon for diverticulum of the bladder and vesical calculi. Both were suffering from emphysema of the lungs, arterio-sclerosis, and cystitis. The complete retention had persisted, notwithstanding dieting, irrigation of the bladder, and the self-retaining catheter. One had a small, the other a large, prostate. Both suffered from boils and showed a high urea percentage in their blood. In February, 1927, we coagulated the prostate in both cases; the patient with the enlarged prostate was submitted to two subsequent treatments in February and March; the patient with the small prostate was given one more treatment, but not until May, because he had developed an epididymitis. Both patients left the hospital in good condition, able to pass water spontaneously, although a small amount of residual urine still remained.

Technique.

The procedure which we followed differed from that of Weijtlandt. We used an active electrode introduced into the urethra, in the shape of an ordinary French catheter, with a strong curve, such as that in vogue for catheterisation of patients with enlarged prostates. Inside the catheter was a metal rod which, through a hole near the end of the catheter, was in contact with a metal plate. The outside surface of this plate was on a level with that of the catheter, which was made of insulating material (Fig. 1). The probe is introduced in the usual way into the urethra, and the right forefinger, slipped into the rectum, controls with exactitude the position of the top of the catheter and the plate in relation to the prostate, the plate being brought opposite the posterior lobe. The large, flat, indifferent electrode is placed under the patient's buttocks, and the diathermic current of ½–1 ampère is switched on. In this way an exactly definable part of the prostate is heated, and the degree of heat can be controlled by the finger in the rectum. As soon as the finger feels a slight heat the current is turned off. The whole procedure takes one minute at the utmost, no anæsthetic being required, unless a preliminary injection of 10 c.cm. of 2 per cent. novocaine be made into the urethra. The treatment can be repeated if necessary. It goes without saying that one should be extra careful, when dealing with small prostates, not to extend the heating too long. It is better to obtain success in repeated sessions than to run the risk, through overheating, of a recto-vesical fistula, as the outcome of too extensive necrosis. For this reason the patient with the small prostate was treated several times. After this favourable outcome six other patients who were deemed unfit for prostatectomy were taken in hand, one of them being 64, another 76, and the remaining four between 80 and 84 years old. All of them showed total urinary obstruction, which remained after a preliminary treatment with the catheter. They were all dismissed, a few without any residual urine, one with a residual urine of 35 c.cm., and three with a residual urine of less than 100 c.cm. One of them needed only one treatment, four two treatments, and one three treatments. Between two consecutive treatments an interval of at least a week was observed. The patient aged 76 was thought to be suffering from a carcinoma of the prostate, judging from the nodular outline and hard consistency of the gland and from its lateral extension towards the pelvic wall. The others showed simple senile enlargement.

FIG. 1.



Introduction of the diathermy point does not differ from introduction of an ordinary catheter. Before treatment the bladder is washed out and 100 c.cm. of normal saline left behind. After treatment the self-retaining catheter is introduced. A few necrotic pieces of tissue are cast off in the course of the next few days. Within a fortnight after the first treatment spontaneous urination was often possible.

Abridged clinical histories of the eight patients treated by diathermy are given below.

CASE 1.—Aged 77 years. Admitted June 5th, 1926. So-called atrophic prostate. Complains of impaired urination for several years and total urinary obstruction since March. General condition very bad. Last July a diverticulum was extirpated and stones were removed. The total obstruction remained unchanged. Cystoscopic examination was frequently made. The total obstruction was caused by a small prostate with a small central lobe. In the end (Feb. 24th) diathermo-coagulation was performed, and repeated on March 4th and 16th. On March 24th the patient passed water spontaneously, at first rather little (250 c.cm.), so that catheter treatment remained necessary until April 15th, after which date all symptoms had disappeared, although a small quantity of residual urine remained (no more than 25 c.cm.).

CASE 2.—Aged 80 years. Admitted Oct. 7th, 1926. Suffered for a few months from trouble in passing urine, and for a few days from total obstruction. Diagnosis: Senile enlargement of the prostate, myocardial degeneration, bronchitis. Prostate about the size of an egg. Notwithstanding catheter treatment, total obstruction remained. The patient suffered from boils. April 7th, 1927, diathermo-coagulation. April 17th, passed urine spontaneously, no complaints, no residual urine.

CASE 3.—Aged 84 years. Admitted Dec. 27th, 1926, with a history of urinary obstruction for one month, becoming complete a few days before admission. Prostate moderately enlarged; catheter treatment without effect. March 6th, epididymitis. May 7th, diathermo-coagulation. May 24th and June 2nd, repeated. June 7th, urinated spontaneously. June 10th, dismissed with small amount of residual urine, about 50 c.cm.

CASE 4.—Aged 84 years. Admitted Jan. 11th, 1927, with total obstruction, bronchitis, emphysema, and irregular heart action. Prostate large, irregular. From Jan. 11th to Feb. 25th treatment with self-retaining catheter. Total obstruction remained. Feb. 24th, diathermo-coagulation. March 6th, catheter withdrawn, spontaneous urination, no retention. Discharged free from symptoms.

CASE 5.—Aged 64 years. Admitted Feb. 2nd, 1927. Three years pollakiuria; for one year complete retention, for which he himself applied a catheter rather frequently, not forgetting to lubricate the beak with saliva before introducing it. Large, dense, irregular prostate. Self-retaining catheter up till March 24th. On this day first treatment with diathermo-coagulation. April 6th, spontaneous urination. Residual urine 35 c.cm. Passed water easily, no complaints.

CASE 6.—Aged 81 years. Admitted April 12th, 1927. Five years' history of obstructed urination, total obstruction for eight days; arterio-sclerosis; herniæ; large, dense prostate. After short treatment with self-retaining catheter and irrigations with nitrate of silver, without obvious effect, treatment with diathermo-coagulation on two occasions. The last time was May 19th. On May 20th discharged free from symptoms and without any residual urine.

CASE 7.—Aged 80 years. Admitted Feb. 14th, 1927, from the medical department, where the bladder was daily emptied for total obstruction. Large prostate, compact. Feb. 17th, diathermo-coagulation. Feb. 24th, catheter removed. Passes a little urine. Again diathermo-coagulation. April 6th, all complaints vanished. Discharged, but a residual urine of nearly 100 c.cm. remained, which has since disappeared altogether.

CASE 8.—Aged 76 years. Admitted April 16th. History of urinary trouble for a few months and total obstruction supervening shortly before admission. Diagnosis: Carcinoma. Prostate irregularly enlarged, with lateral extensions towards the pelvic wall; bronchitis, arterio-sclerosis, hernia. March 24th, diathermo-coagulation. April 6th, first spontaneous urination. Further diathermy treatment. April 16th, no complaints. Residual urine about 100 c.cm. Discharged.

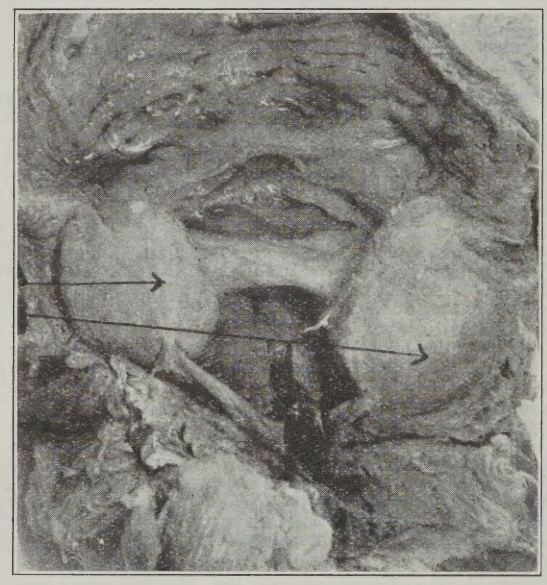
After these eight patients we treated all cases with total obstruction in the same way, and no more prostatectomies have been done. We can now record 40 cases, some of which were treated in the out-patient department. The treatment is extremely simple and there is very little chance of annoying surprises, provided we take the necessary precautions and accurately locate on the introduced forefinger the place for the active electrode (the plate) and discontinue the process of heating after one minute. Introduction of novocaine in the urethra sufficed as an anæsthetic, although it is not necessary. There was hardly any pain during the treatment, provided the electrode was properly situated. The mucous membrane on the far side of the pars prostatica is more sensitive than the pars prostatica itself. We never noticed any bleeding; even in those cases where catheter treatment caused bleeding it stopped immediately after coagulation. Incontinence of urine never occurred.

Routine Treatment.

With an ordinary catheter we empty the bladder, the bladder is washed out, and 100 c.cm. of normal saline is left behind. The catheter is withdrawn and the probe

introduced. With the forefinger in the rectum the exact position of the plate (the active electrode) opposite the posterior lobe, is controlled, and the current (which should not exceed 1 ampère) is turned on and applied during no more than one minute. The probe is moved slowly up and down to ensure application to the full length of the pars prostatica. When heat is felt, the current is turned off, even when the treatment has lasted less than one minute. Sometimes the moment coagulation is effected, one feels a peculiar purring sensation at the end of the probe, coinciding with an immediate drop of the ampère-indicator; it is then time to remove the electrode (probe) further up or down, in order to coagulate a fresh part of the prostate. The probe is withdrawn and the self-retaining catheter put in in its stead. The bladder is washed out daily, and after eight days we take the catheter out and wait to see if spontaneous

FIG. 2.



The arrows point to the separated lobes of the prostate.

urination occurs. If not treatment is repeated, if necessary more than once, but always observing an interval of at least one week. Meanwhile the bladder is daily emptied with the catheter until spontaneous urination manifests itself. At first it may happen that the patient cannot fully empty his bladder. In that case the treatment should be repeated until the residual urine is reduced to about 50 or 60 c.cm. Coagulation is then no longer necessary, and all that remains to be done is daily irrigation of the bladder to make the residual urine disappear altogether.

It is too early to claim ultimate cure, but even if later on it appears that no cure was obtained, a repetition of the treatment would be feasible. At any rate, we prefer this treatment to the dangerous and bloody operation with these very old patients, having a bad general condition. Moreover, the method is new and the instruments improvised, and improvements are certainly possible.

Complications.

1. *Death.*—Four patients have died. Twice we had the opportunity of observing the results of our coagulation in post-mortem cases a few weeks after the last treatment. One of the patients died from a general infection following introduction of a fresh catheter, when a false passage was made. The other died from perforation of an infected diverticulum of the bladder. Both patients had already passed urine spontaneously for a number of weeks. They were still under treatment for cystitis. At the autopsies the prostate showed a deep, wide furrow in its posterior part, which caused the two lobes to be well separated (see Fig. 2). It was evident that the central part of the prostate had disappeared altogether through coagulation. The two other patients died from pneumonia and emphysema.

2. *Cystitis.*—Most of the patients already have cystitis before the treatment; if not, in most cases the treatment by catheter and diathermic probes is followed by cystitis.

3. *Epididymitis.*—Epididymitis is often seen. It occurred in 10 of our 52 cases; in a few cases an abscess from a purulent epididymitis followed, and necessitated incision. In the other cases an ice-bag only was used, with good results.

4. *No result.*—In three cases spontaneous urination is not obtained after five or six treatments on account of atonic detrusor.

Summary.

Surgical diathermy will gain in importance when we have had more experience in managing it properly. For the treatment of prostatic hypertrophy it is undoubtedly of the utmost value. The advantages of this method are the following: (1) The treatment is not very dangerous. (2) It can be executed without pain after preliminary injection of novocaine in the urethra. (3) There is no bleeding. (4) The procedure is under continuous control of the forefinger. (5) All kinds of prostate trouble which involve retention can be tackled, even the atrophic prostate. (6) This method can replace a considerable number of otherwise unavoidable prostatectomies. (7) In cases in which operation cannot be carried out on account of the bad general condition diathermo-coagulation can still be applied successfully.

Note.—The probe is manufactured by the firm Krupp (Essen). The metal part of the probe is made of stainless steel, and the curve of the probe can be modified to some extent after heating it in warm water. Another probe has the form of a cystoscope with the plate on the inner surface near the top.

MULE-SPINNERS' CANCER AND MINERAL OILS.

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THE experiments to be described were undertaken with special reference to mule-spinners' cancer of the scrotum, but at the same time samples of oils other than those used in the cotton-spinning industry were tested. It has already been shown by Leitch that shale oil is far and away the most toxic of the lubricating oils, while the crude petroleum oils, which this worker obtained from many oil-fields in different parts of the world, are relatively little capable of exciting the development of malignant tumours. It will be found that, in the main, our results confirm those of Leitch. The material utilised by us consisted chiefly of purified oils or oil blends actually used for the lubrication of the mules in the spinning rooms. It has not always been an easy matter to discover the actual source of some of the samples, but in many cases this does not appear to be of great importance in the present state of our knowledge. As far as can be seen at present the lubricating oils tested by us can be divided into three groups according to their carcinogenic action.

1. Sperm oil, which appears to be harmless.
2. Natural petroleum oils, which are but little carcinogenic.
3. Shale oils, which are very carcinogenic, and seem to act as a weak tar.

It remains to be seen whether at a later date we shall be able to show that oils from some fields are consistently more toxic than oils from certain other fields, or whether it is only the refining processes undergone by the oils to which any difference in them is really due.

In each of our experiments 100 mice were used, the oil being applied to the skin of the back with a camel-hair brush twice weekly. The following oils have been tested :—

1. A blend of a purified American petroleum oil and 10 per cent. sperm.
2. A pure American petroleum oil.
3. A pure, refined, heavy Pennsylvanian petroleum oil.
4. A pure, refined, light Pennsylvanian petroleum oil.
5. A pure, refined Californian petroleum oil.
6. A pure, refined Texas petroleum oil.
7. A pure, refined shale oil.
8. A pure, refined sperm oil.
9. Waste oil from wool mule-spinning machines.
10. Waste oil from cotton mule-spinning machines.
11. A highly refined liquid paraffin.
12. A light machine oil, as used for sewing machines.

Nos. 1 and 2 were obtained direct from the cotton-spinners. Nos. 3–8 were guaranteed samples, kindly supplied to us gratis by an oil blender, and were oils used for blending spindle oils. Nos. 9 and 10 were collected by us from the oil-saturated waste material on the spinning machines.

The results of these experiments will be found in Table I. It will be seen that the shale oil applications led to the development of a very much greater number of tumours than any of the other oils, and that the first wart and the first epithelioma appeared at an earlier date. The six American petroleum oils gave occasional tumours, but usually only after the lapse of a considerable time. One of them—viz., No. 6, the Texas oil—has, up to the present time, given no sign of leading to the development of a tumour. On the other hand, the Californian oil has given quite a number of tumours. Although the experiment lasted for 73 weeks, No. 1 oil gave only a solitary epithelioma, and that in the fifty-third week.

TABLE I.—*Carcinogenic Activity.*

Oil No.	Week of first tumour.		Total No. of tumours.		Duration of expt. in weeks.
	Wart.	Ep.*	Warts.	Ep.†	
1. Petroleum ..	51st	53rd	—	1	73
2. „ ..	35th	59th	2	2	66
3. „ ..	26th	—	1	0	54
4. „ ..	49th	—	1	0	52
5. „ ..	19th	38th	6	1	53
6. „ ..	—	—	0	0	53
7. Shale ..	17th	26th	13	18	50
8. Sperm	—	—	0	0	52
9. Waste wool ..	—	—	0	0	78
10. „ cotton ..	34th	—	2	0	62
11. Liquid paraffin..	—	—	0	0	77
12. Machine ..	29th	—	5	0	56

Ep.* = Epithelioma. Ep.† = Epitheliomata.

The oils Nos. 1–12 correspond to Nos. 1–12 in the text. The proportion of shale oil tumours to petroleum oil tumours is 17 to 1. The average time for the development of the first wart and first epithelioma with the petroleum oils was at least 35 and 51 weeks respectively, as against 17 and 26 with the shale oil.

In view of the long duration of these experiments with oils an attempt was made to concentrate the toxic material in the oils. Several methods were tried, but the only one which will be mentioned here is that of fractional distillation. In these preliminary experiments the oils were divided into two fractions and no refractionations were made, and at the same time only two oils, Nos. 1 and 2 in the list, were tested. We have in progress, however, many additional experiments of this nature, the results of which will be discussed at a later date.

The results with oils Nos. 1 and 2 will be found in Table II., and it is obvious that in these two oils the heavy fraction is the more carcinogenic, while the lighter fraction appears to be less toxic than the original oil. Oil No. 1 was distilled at atmospheric pressure, the lighter fraction coming over between 355° and 385° C., and the heavier from 385–420° C. Oil No. 2 was distilled under a pressure of 12 mm. the lighter fraction coming over between 240–300° C., and the heavier from 300–360° C. Of course, in all such experiments it is necessary to be certain that there is no fabrication de novo of the carcinogenic substances during the manipulations to which the oils are subjected. Control experiments with this object in view are now under way, but they are not yet far enough forward for any conclusions to be drawn from them.

TABLE II.—*Distillation of Oils.*

Oil No.	Week of first tumour.		Total No. of tumours.		Duration of expt. in weeks.
	Wart.	Ep.*	Warts.	Ep.†	
1. Light fraction ..	—	—	0	0	61
1. Heavy „ ..	26th	38th	6	4	52
2. Light „ ..	32nd	—	1	0	52
2. Heavy „ ..	23rd	18th	10	11	50

Proportion of tumours in animals treated with heavy fractions to tumours in animals treated with light fractions is 31 to 1.

Freeing Oils from the Carcinogenic Factor.

Finally, a few words may be said on attempts which we have made to free oils from their carcinogenic substance or substances. The methods used were :—

1. Extraction with sulphuric acid.
2. Extraction with methyl sulphate.
3. Extraction with methyl sulphate and picric acid.
4. Extraction with methyl sulphite.
5. Oxidation by means of pure oxygen at 150° C.
6. Reduction by means of amyl alcohol and sodium.

Only the sulphuric acid experiments have been in progress sufficiently long for us to be able to draw our final conclusions, but we can already say of the remaining five that they have at any rate reduced the carcinogenic power of the oils. (N.B.—No. 6 experiment was performed with a synthetic tar in place of an oil.) As was expected, the results with the sulphuric acid, which will be found in Table III., showed most conclusively that the acid purified the oils of their toxic power to a remarkable degree. It remains to be seen, however, whether the oils are entirely freed of their carcinogenic principle or principles, and concentration of the sulphuric acid-treated oils are now being carried out in order to investigate this point. Incidentally, these purification experiments have been undertaken with the object of trying to get an indication of the nature of the toxic substance or group of substances responsible for the production of the malignant tumours. Our results all seem to suggest that the unsaturated hydrocarbons and the aromatics are the substances which first need investigation.

TABLE III.—*Sulphuric Acid Purification.*

Oil No.	Week of first tumour.		Total No. of tumours.		Duration of expt. in weeks.
	Wart.	Ep.*	Warts.	Ep.†	
2. Heavy fraction	23rd	18th	10	11	50
„ „ sulphuric..	—	—	0	0	58
7. Shale (*a*)	17th	26th	13	18	50
„ Sulphuric ..	—	—	0	0	48
„ (*b*)..	16th	35th	15	7	48
„ Sulphuric ..	—	—	0	0	41
„ Heavy fraction ..	22nd	26th	10	8	45
„ „ sulphuric..	—	—	0	0	45

Total tumours among 400 animals. { Sulphuric acid-treated oils = 0; Controls .. .. .. = 92

An endeavour was made to produce tumours in mice by the subcutaneous and intraperitoneal injection of many petroleum and other oils. Although many of the animals among the 357 utilised survived for over a year, all have so far been negative. However, 75 of the animals are still alive.

Conclusions.

1. A few tumours, some of them histologically malignant, have developed on mice subjected to the skin application of petroleum oils as used in the cotton-spinning industry.

2. Passage of such oils through the machinery does not appear to render them more carcinogenic.

3. The higher boiling fractions of the two petroleum oils tested were much more carcinogenic than the lower boiling fractions. Tumours were in the proportion of 31 to 1.

4. Shale oil, which is obtained by the destructive distillation of shale, appears to be much more dangerous than the petroleum oils obtained from wells. Tumours were in the proportion of 17 to 1.

5. The purification of the oils by means of sulphuric acid renders them practically harmless. In our eight experiments the treated oils led to the development of no tumours, as against 92 tumours in the controls. Experiments on other methods of purification are mentioned.

6. The subcutaneous and intraperitoneal injection of many different oils failed to excite the development of tumours.

VARIATIONS IN THE VOLUME OF THE CHEST WITH CHANGES OF POSTURE.

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WHILE house physician to Sir Charlton Briscoe I assisted him in some observations upon the variations of the level of the diaphragm in normal individuals. These observations were carried out by X ray examination, both in the usual method of a direct antero-posterior view and also by taking observations of the level of the diaphragm where it left the chest wall in the post-scapular lines, and in the nipple line on the right side anteriorly. The position of the heart prevented a corresponding observation on the left side. These observations showed that the diaphragm is at its lowest position in the thorax when the subject is erect, at its highest when he is supine, and intermediate when he is reclining at an angle of 45°. The changes in level occur rapidly with changes of posture. Further, when changes of posture occur, the diameters of the chest undergo alterations. Measurements were taken at the levels of the upper and lower ends of the gladiolus (the joints between the manubrium and gladiolus and between the gladiolus and xiphisternum) and at the lowest border of the thorax all in the mid-axillary line. These transverse measurements are increased when the patient assumes a reclining or supine posture. The change is not so rapid from erect to supine as it is from supine to erect. The antero-posterior diameter at the level of the lower end of the gladiolus is also increased in a similar manner; that at the upper end of the gladiolus varies, being sometimes increased and sometimes diminished.

In view of these changes in the diameters of the chest and the level of the diaphragm, it was not possible to foretell whether any change would occur in the volume of the thorax. A change in volume would offer an explanation for postural deflation, and might conceivably offer some explanation for the different postures adopted by patients suffering from heart lesions. It was in the hope of throwing some light on the latter that this work was undertaken.

Methods.

Those who have had experience of volumetrical work on the respiratory system know how difficult it is to get a subject to breathe naturally through a valve, and what varied results may be obtained. In these experiments every precaution was taken to ensure uniformity of results. The normal subjects were students of the hospital. The observations were made at 9 A.M., shortly after breakfast. Practice breathing with the valve was undertaken on several occasions before the actual observation, and all changes of posture were rehearsed. Repetition of experiments showed a certain amount of variation; the changes, however, were all of the same nature, although the actual volumes varied. X rays show a definite and rapid alteration in level of the diaphragm on change of posture, usually within two to five breaths; in some postures the full degree of change is attained only after a much longer period. In the following experiments ten breaths were taken as covering a period in which a definite alteration occurred.

The following changes of posture were used :—

1. Lying supine to standing erect.
2. Standing erect to lying supine.
3. Lying supine to reclining at 45°.
4. Reclining at 45° to lying supine.
5. Reclining at 45° to sitting upright.
6. Sitting upright to reclining at 45°.

The apparatus was as follows :—

1. A hinged table upon which the subject can lie supine and which can be swung easily from the horizontal to the vertical position, with a foot-rest to stand on. This is used for changes 1 and 2.

2. A couch with a hinged back which can be raised quickly to make the subject sit at 45° and sit upright from the supine position, his legs being horizontal all the time. This is used for investigations 3–6.

3. A respiratory valve with a rubber flange mouth-piece and nose-clip, fitted with light rubber "flutter" or "disc" valves offering a minimal resistance and with a very small "dead-space." The valve is connected by two wide flexible tubes to two 10-litre bags of light mackintosh material. A two-way aluminium tap is fitted between each tube and bag, allowing the subject either to inspire from one bag and expire into the other through the valve, or to breathe in and out of the air of the room. The volume of air in the bags is measured by displacing an equal volume of water contained in a large carboy, and weighing the displaced water. The bags are emptied by sinking them with a leaden weight in a large tank of water; the pressure of the water on the outside, emptying the bags completely and uniformly, drives the air into a closed carboy. The water in the carboy is saturated with carbon dioxide to avoid loss of volume by solution of carbon dioxide; the air in the carboy at room temperature displaces an equal volume of water, which runs out into a vessel; the water levels are adjusted so that the pressure inside the carboy is at atmospheric pressure again, when the water ceases to run away; the displaced water is weighed.

On testing the apparatus without a subject breathing, the experimental error in measuring the volume of the bags was below 50 c.cm. (1 per cent.). With the subject breathing at a constant posture, the error was below 100 c.cm. (2 per cent.) for ten breaths.

The method of performing the experiments is as follows :—

Change to be recorded; from supine to vertical.

Having loosened all tight clothing, the subject lies supine upon the table; the mouth-piece and nose-clip are adjusted and, with the taps open, he breathes through the valve in and out of the atmosphere. A known volume of air is put in the inspiratory bag; the expiratory bag is emptied and the bags are attached, one to each tap. After lying supine for a few minutes to ensure a constant level of the diaphragm, the taps are turned at the end of an expiration, so that he inspires from one bag and expires into the other. After one breath the table is swung to a vertical position by an assistant; at the end of the tenth expiration the taps are turned off and the subject disconnected. The time taken for the ten breaths is noted by a stop-watch. The volume of air in the bags is now measured and the volume of inspiration and expiration for the ten breaths is calculated. The experiment is now repeated in the opposite direction, the subject first standing erect and then being swung into the horizontal position. The volume of inspiration and expiration is again measured. Intermediate postures are similarly investigated—i.e., from reclining at 45° to lying supine, or to sitting erect with the back resting against the couch, and vice versa. The figures of a typical experiment will illustrate the method.

Subject 1. Aged 25 years, normal.

Lying Supine to Standing Erect: Change 1.

	lb.	oz.	dr.
Inspiratory bag before experiment	16	0	12
Remainder in bag after experiment	1	4	0
∴ Volume of inspired air	14	12	12
Expiratory bag (empty before observation) after experiment	13	2	12
∴ Excess of *inspired* air	1	10	0
	= 737 c.cm.		

Standing Erect to Lying Supine: Change 2.

	lb.	oz.	dr.
Inspiratory bag before experiment	16	4	6
Remainder in bag after experiment	3	6	14
∴ Volume of inspired air	12	13	8
Expiratory bag (empty before observation) after experiment	14	4	4
∴ Excess of *expired* air	1	6	12
	= 644 c.cm.		

The weights given above are the weights of the water displaced by the air contents of the bags.

The results of these experiments on normal people show a definite and uniform change. Ten cases were examined in the major change of posture, from lying supine to standing upright and vice versa (changes 1 and 2). On assuming the erect posture there was an excess of inspiration varying from 493 to 1093 c.cm., with an average of 822 c.cm. On assuming the horizontal position there was an excess of expiration from 270 to 903 c.cm., with an average of 500 c.cm.

Five cases were examined in the first minor change from lying supine to sitting at 45° and vice versa (changes 3 and 4). This change was similar to the major change, except that the volumes were about half. On assuming the more vertical posture there was an excess of inspiration from 70 to 477 c.cm., with an average of 205 c.cm.; with the more horizontal posture there was excess of expiration from 31 to 150 c.cm., with an average of 94 c.cm.

Ten cases were examined in the second minor change, from sitting at 45° to sitting erect, and vice versa (changes 5 and 6). Here the results were not constant as in the other two changes of posture, for in five cases there was excess of expiration on assuming the more vertical position. The amounts of excess were small, averaging about 200 c.cm.

Conclusions.

The results in normal individuals show that the capacity of the chest is least when supine, greatest when erect, and intermediate in the intermediate postures. This corresponds with the alteration in elevation of the diaphragm, and not with the change in the diameters of the thorax. This change of volume occurs rapidly by the expulsion or retention of the air in the lungs—i.e., by expiring more than is inspired, or by inspiring more than is expired. The results are clear-cut in respect of changes arising when the posture is altered from supine to standing erect, or vice versa, and from supine to reclining at an angle of 45°, or vice versa. The slighter change of posture from reclining at an angle of 45° to that of sitting upright—i.e., moving the back of the couch against which the patient rests through an angle of 45°—gives a variable result, air being either retained or expelled. No reason for this is forthcoming. It does not appear to be due to the type of breathing, thoracic or abdominal, of which careful records were made.

The results show definitely that in normal persons the changes in level of the diaphragm are associated with a change in volume of the chest, which is mainly accommodated for by alteration in the balance between air inspired and air expelled.

Posture and Chest Volume in Heart Disease.

The cardiac cases were investigated only in the minor change of posture, from lying supine to sitting at 45° and vice versa (changes 3 and 4), as it is comparable in every way to the major change, and causes much less disturbance to the patients, many of whom were severely decompensated and unable to stand up. The results may be summarised as follows:—

Twenty cardiac cases were investigated. Of these, ten suffered from mitral stenosis in different stages of cardiac decompensation; they were all females, from 10 to 59 years of age. The remaining ten cases were instances of aortic regurgitation, seven male and three female, from 12 to 68 years. In seven the lesions were due to syphilis, in three they were of rheumatic origin. Normal results were obtained in seven of the mitral cases and decompensation was present in three of these. Abnormal results were given in three cases. The first was decompensated, but gave a normal result four weeks later, when compensation was restored; the second was a very nervous woman, who breathed entirely with the thorax and who refused to be reinvestigated; the third was a girl, aged 12 years, also rather nervous and a thoracic breather, who gave a similar result at a second examination. The results were normal in eight of the aortic cases, which included two decompensated hearts. Two cases were abnormal; the first was a boy of 12 years with a decompensated aortic and mitral lesion; the second was a man with a fairly large fusiform aneurysm of the aorta, with good compensation who breathed entirely with the abdomen. Five of the mitral and two of the aortic cases were uncomfortable lying supine, and one of these aortic cases was grossly decompensated. There was no constant difference in the type of breathing, whether abdominal or thoracic, in the two series of cases.

On examining the results of those observations in the two types of cardiac cases there is no experimental evidence to differentiate them from each other or from the healthy subject. It was thought worth while to record these findings, although they are negative.

Summary.

(1) With changes of posture of the body the diaphragm alters in level, making a difference in the volume of the chest; this difference in volume is mainly effected by alteration in the balance of the air inspired to the air expired. (2) A change in level of the diaphragm, on assuming a different posture of the trunk, takes place in less than ten breaths. (3) In wide changes of posture, from lying supine to standing erect, the difference of volume between inspired and expired air is large. In small changes of posture, lying supine to sitting at 45° and sitting upright to sitting at 45°, the difference in volume is smaller, corresponding roughly to one-half of that found in the full range of movement. (4) The experiments agree with the X ray findings. In the erect position the diaphragm is low and the intrathoracic volume is large; in the supine position it is high and the volume is diminished; sitting at 45° the diaphragm and the chest volume are intermediate in position and size. On sitting upright the level of the diaphragm varies somewhat with different individuals, and may approach the "high" or the "low" position. The volume shows corresponding changes. (5) No difference is found between the aortic and the mitral case. (6) The change in level of the diaphragm might well account for the "postural deflation" occurring in post-operative cases.

Since this work was completed two articles have been published which seem to confirm my findings.

1. W. A. Wilson,[1] working with a recording spirometer on normal subjects, finds that the volume of reserve air varies with posture, from 250 c.cm. lying supine to 1550 c.cm. standing erect.

2. J. R. Head,[2] working on the vital capacity of cases before and after surgical operations of all sorts, found that there was a reduction of the vital capacity in all cases from 5 to 80 per cent. The greater reduction occurred in cases where the respiratory muscles were injured, especially abdominal operations near the diaphragm. The time taken for the vital capacity to return to normal was proportional to the initial drop.

I have to thank Sir Charlton Briscoe for suggesting this research and for very helpful advice; I must also thank Prof. A. J. Allmand, of King's College, London, for advice as to methods, and Dr. R. Rutherford and Dr. J. N. Cumings, of King's College Hospital, for their valuable assistance in performing the experiments, and I am most grateful to the various students who gave up a good deal of time and suffered a considerable amount of inconvenience while being experimented on.

References.—1. Wilson, William A.: The Influence of Posture on the Volume of Reserve Air, Jour of Physiol., 1927, lxiv., 54. 2. Head, Jerome R.: The Effect of Operation on the Vital Capacity, Boston Med. and Surg. Jour., 1927, excvii., 83.

Clinical and Laboratory Notes.

A CASE OF SPONTANEOUS RUPTURE OF THE THORACIC AORTA.

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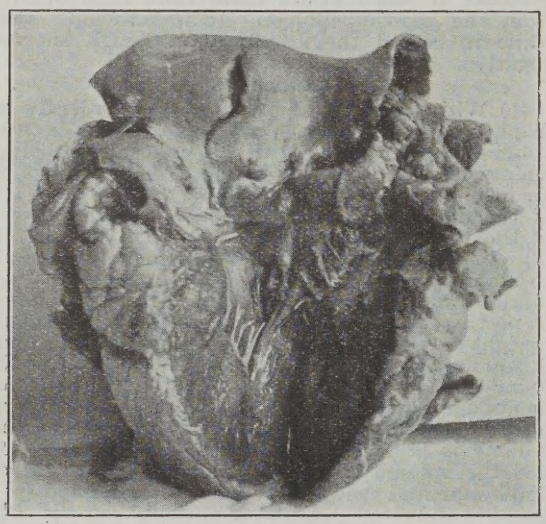
Complete rupture of the aorta without injury or severe strain seems sufficiently rare to justify description of the following case.

Clinical History.—The patient, a female, aged 82 years, was suffering from chronic mania. Her clinical records show that she had well-marked signs of arterio-sclerosis, with a double aortic and a mitral systolic bruit. Apart from general feebleness attributable to her age, she was comparatively well and able to occupy herself in the ward during the day. There is no history of angina, or of any



Complete rupture of the aorta.

symptoms leading up to the rupture. The Wassermann reaction was not performed.

On the morning of Feb. 1st she suddenly collapsed on getting out of bed, and died within a few minutes.

Post-mortem Examination.—The heart was normal in size; weighed 9¾ oz.; length from aortic ring to apex, 9 cm.; left ventricular wall, 2 cm. thick. The pericardial sac was distended and contained over 2 pints of fluid blood. The subpericardial fat was greatly increased; the muscular wall of the left ventricle firm and slightly hypertrophied. The aortic and mitral valves were thickened and showed evidences of chronic endocarditis. The first part of the aorta was not dilated to any noticeable extent and showed no gross atheroma, but the intima around the openings of the coronary arteries had a scarred and furrowed appearance.

There was a longitudinal split 3 cm. long situated just above the aortic valve and penetrating both intima and media. The blood had made its way between the middle and outer coats of the vessel wall, distending the adventitia for about 4 inches toward the arch, finally bursting into the pericardial sac. The transverse and descending parts of the aorta showed extensive atheroma with calcareous plaques specially round the orifices of the arterial branches. The kidneys were small, pale, and of the granular contracted type.

Stained sections of the ascending aorta showed atrophy of the intima and well-marked degenerative changes in the media. The adventitia was distended with blood-clot. The muscle-fibres of the myocardium were apparently healthy except for a slight increase of brown pigment around their nuclei.

Remarks.

According to most authorities spontaneous rupture of the aorta is rare and usually transverse. In this case it would appear that the sudden slight increase of blood pressure on getting out of bed was sufficient to cause the vessel wall to split longitudinally at the site of an intimal fissure, but it is also highly probable that the rigidity of the atheromatous arch was a factor in the production of extra strain upon the weakened first part of the aorta.

Sir William Osler[1] remarks that spontaneous rupture—

"may occur in a vessel apparently healthy, either as a result of a sudden strain or sometimes without any effort. . . . It has occurred in a healthy boy, aged 13, following prolonged exertion. . . . The rupture in the external coat is rarely directly opposite that in the intima, so that there is usually some evidence of dissecting aneurism. The cases present very characteristic features, the symptoms occurring in two stages . . . . one corresponds to the rupture of the intima, with which is associated the severe pain and collapse, from which the patient gradually recovers. Then in the course of three or four days external rupture takes place with sudden death."

In the present case, however, there were no premonitory symptoms suggesting the occurrence of these two stages, but it has to be remembered that subjective symptoms in the insane are often in abeyance.

I have to thank Dr. W. Vincent, medical superintendent, for permission to publish this report.

A CASE OF ELECTROCUTION
WITH NOTES ON THE CLINICAL VALUE OF LOBELINE.

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AND
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The accident here described occurred to a healthy athletic young man, about 21 years of age, who was an assistant in the shop of an electrical engineer.

He was sitting in the workshop during his dinner hour, when his feet slipped from the edge of a table on which they were resting and knocked over an electric fire. The heating elements broke so that the metallic casing became alive and the lad's foot remained in contact with this for approximately one minute. The voltage was 220 and the current direct.

One of us (J. G. M.) was summoned at 1.45 P.M. and found the patient slightly cyanosed, sitting on a chair, in a stuporose condition. He complained of severe frontal headache and nausea, and later he vomited. He was placed in a comfortable position and treated for shock. His condition improved considerably until 3 P.M. when he suddenly became unconscious. He vomited again and developed considerable œdema of the lungs with irregular stertorous breathing, marked cyanosis, and a full bounding pulse. The right pupil was dilated and immobile, the left, pinpoint, and a divergent strabismus developed later. The corneal reflex was just present on both sides. In consideration of the irregular breathing, cyanosis and œdema of the lungs, gr. 1/100 of atropine sulphate and gr. 3/10 of lobeline hydrochloride were given intramuscularly. Oxygen was administered and as a result the breathing became more regular and deeper, the cyanosis improved and the œdema lessened. All the muscles of the body were now in a state of tonic contraction and about every five minutes a convulsion of both arms and legs occurred. At 4 P.M. the temperature had risen to 104° F., the pulse volume was still full, and the breathing was regular. The epileptiform spasms became less frequent, and at 6.15 P.M. the muscles of the arms and legs were flaccid, the pulse was rapid, and of small volume, while the respiration was of the Cheyne-Stokes type. A further dose of gr. 3/20 lobeline hydrochloride and gr. 1/60 strychnine was given, but unfortunately this was of no avail. Death occurred at 7.45 P.M.

Post-mortem.—There was no sign of an electric burn on the skin. On opening the skull there was intense vascular congestion of the dura mater, more noticeable on the left than the right. The cerebral vessels were similarly congested, there being free blood present with clots in the following positions: (1) around the medulla, (2) between the cerebellum and the tentorium, (3) over the island of Reil. Both lateral ventricles were full of blood-clot. On

[1] Osler and McCrae: Modern Medicine, 1927, vol. iv., p. 855.

microscopical examination of the cerebral cortex minute hæmorrhages were visible. The motor cells showed marked chromatolysis.

In their summary of the action of lobeline (THE LANCET, 1926, ii., 1255) F. R. Curtis and Samson Wright point out its value as a powerful respiratory stimulant, but suggest that caution should be exercised in use owing to its property of producing marked cardiac depression. During the past two years we have used lobeline "Ingelheim" on six occasions, both in adults and children, giving the doses recommended by the manufacturers—i.e., to adults gr. 3/20, and to children gr. 1/10. Our clinical experience agrees with their experimental evidence that lobeline is a powerful respiratory stimulant, but the only cardiac depressant action we have noticed is slight diminution in the pulse volume. In order to investigate any depression in the blood pressure, we submitted ourselves to intramuscular injections of 10 mg. of lobeline. Readings of the blood pressure and pulse-rate were taken every minute for between 20 and 25 minutes after injection and no marked lowering of the systolic blood pressure was noticed. In the case of one of us, the pulse-rate rose 12 beats per minute four minutes after injection and maintained this new rate for 16 minutes. In both cases a perceptible diminution in the pulse volume occurred between five and six minutes after injection.

P. Behrens and C. T. Pullwka [1] found that the blood pressure remained practically constant when using it experimentally on animals poisoned with carbon monoxide. We have not had the experience of giving two doses within an hour, but in all our cases it has produced the desired reaction, and we do not believe that its cardiac depressant action is sufficient to mitigate its value or seriously restrict its use.

A CASE OF SUBCUTANEOUS EMPHYSEMA COMPLICATING LABOUR.

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CASES of surgical emphysema occurring during labour are of sufficient rarity to warrant description of the following case which occurred in the obstetrical unit of the Royal Free Hospital.

A primigravida, aged 18, had a normal antenatal period except for slight bronchitis. She went into labour at full term and had a long first stage (55 hours). The second stage was also long (six hours). There was no maternal or fœtal distress and no interference was indicated. Two and a half hours before the child was born swelling appeared in the face extending from the cheeks to the neck. It was not tender and the patient only complained of slight discomfort. Later in the day after delivery the swelling was found to extend all over the face and chest. Typical crackling was present. There were a few scattered rhonchi in the chest. The swelling lasted for ten days. No special treatment was needed for the emphysema.

The puerperium was complicated by a *Bacillus coli* urinary infection. The patient made an uneventful recovery.

Dr. L. S. T. Burrell, who kindly examined the patient, found no lesion in the chest suggestive of tuberculosis and an X ray was normal. It is probable that during expulsive efforts a vesicle was ruptured into the mediastinum which caused the escape of air into the connective tissue planes of the neck. I have found five references [2] in recent English and American literature to a similar condition. In all these cases the emphysema caused no serious symptoms in itself and disappeared in about a fortnight.

I am indebted to Prof. Louise McIlroy for permission to publish this case.

[1] Klin. Wochenschrift, vol. iii., No. 37.
[2] P. N. Charbonnet: Surgery, Gynecology, and Obstetrics, 1925, xl., 105; J. D. T. Reckitt: THE LANCET, 1922, i., 843; A. H. Davidson: Irish Journal of Medical Science, 1923, 5th series, xiii., 79; D'Arcy Harvey: Brit. Med. Jour., 1924 i., 1089: A. W. Hansell: Ibid., 1924, ii., 104.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of this Society was held in London on March 30th, Colonel L. W. HARRISON in the chair. A discussion on the

Antenatal Treatment of Gonorrhœa

was opened by Mr. EARDLEY HOLLAND, who gave an account of the views on this subject he had formed in the course of obstetric practice. He had been impressed, he said, by the rarity of gonorrhœa as a complication of pregnancy or the puerperium, both in hospital and private practice. Among 10,000 confinements at the City of London Maternity Hospital between 1922 and 1927 there were records of only eight cases of gonorrhœa, though a number of slight cases had probably been missed. There were only three cases of ophthalmia neonatorum, and though ocular instillation of silver nitrate was a routine of the hospital, the rarity of the condition was nevertheless striking. At the London Hospital, during 1926 and 1927, when there were 4200 confinements, there were only four cases of gonorrhœal ophthalmia. At that hospital there was a special ward of six beds for cases of puerperal septicæmia, and in this ward during the last 22 years there had been only one case of gonococcal septicæmia. During the six years from 1922, 99 pregnant women were sent to the hospital's venereal clinic on account of vaginal discharge, and only 28 of them could be proved to have gonorrhœa. These cases included many which had been sent in by general practitioners, and in the same period the deliveries at the hospital numbered 13,000. Mr. Holland thought there was a tendency to make a loose and facile diagnosis of the disease in pregnant women without sufficient data. Most midwives, he believed, considered that every woman who had an excessive discharge had gonorrhœa—a mistake which admittedly had the result of bringing all doubtful cases for treatment. He asked whether a coincident clinical infection of the urethra, Bartholin's gland and the cervix, with the presence of macules about the orifices of the urethral and Bartholin's ducts was sufficient to warrant a diagnosis of gonorrhœa. His own view was that this diagnosis should not be made unless the organism could be found—i.e., demonstrated by proper technique. He would not accept the diagnosis if the organism obtained did not grow on a medium favourable to the gonococcus, the culture tube being maintained at the proper temperature, remembering how susceptible the organism was to cold. A prevalent error was to regard the so-called venereal warts (condyloma acuminata) as pathognomonic of the disease, which they were not. On the other hand, many cases of gonorrhœa were sure to go unrecognised, because they presented few or no signs or symptoms. The vaginal discharge of many pregnant women was simply an excess of the normal discharge, and gonococcal cases were very liable to be regarded as normal for this reason. Gonorrhœa might seem to be common to the venereal expert, because he dealt only with this department, but it was rare in the population as a whole. To take cervical cultures from all pregnant women in order to avoid missing a case of the disease would be as unpractical as to make pregnancy notifiable in order that every woman should have a Wassermann test. The great need was to teach all in the profession to recognise suspicious cases. Most cases of gonorrhœa in pregnancy did not show the fully developed signs of the disease. It was of the utmost importance to treat and cure the disease before the woman reached term. Gonorrhœa was less dangerous during pregnancy than at other times, because the ovum intervened to prevent

infection of the Fallopian tubes from the infected cervix. The termination of pregnancy, however, was almost always followed by upward spread of the infection, which made it very necessary that diagnosis and treatment should be early. He asked whether gonorrhœa was more resistant during pregnancy than in the non-pregnant state. For many years practitioners had been afraid of carrying out vigorous cervical swabbings lest abortion might result, but he believed that, given reasonable care, this fear was groundless. He had never seen a case of abortion which might have been due to gonorrhœa.

Dr. F. H. LACEY began by speaking of the necessity for close coöperation between all maternity and child welfare clinics and venereal disease centres. Gonorrhœa had been much in evidence since the war, and women often did not seek relief, especially in the lower classes, because their symptoms were slight. This applied particularly to those in domestic service, who had, perhaps, only one free night weekly, on which no clinic might be open. He regarded antenatal work as the greatest advance in obstetrics during the last few years. In Manchester the out-patient departments of large antenatal clinics were in close touch with the venereal clinics, and women having a discharge which might be gonococcal were transferred to the venereal clinics for attention. It was difficult to treat a woman as an out-patient, especially when the husband refused to be treated. Often the husband's infection occurred during the last few weeks of his wife's pregnancy. When the diagnosis of her condition was in doubt, it was safer to regard her as infected. As regards treatment, when patients would not attend regularly, self-douching was better than no douching at all. He had been disappointed with vaccines, except in gonococcal rheumatism. Among 119 women suffering from gonorrhœa delivered in the last three years there had been no case of puerperal fever or ophthalmia neonatorum. He did not think that gonorrhœa played an important part in the causation of puerperal fever. Many women were infected by their husbands shortly after the puerperium, the latter having acquired the disease during the wife's lying-in. In a series of 375 cases of puerperal fever the gonococcus was found in only five, and in all of these recovery took place.

In conclusion, Dr. Lacey raised the question how the incidence of gonorrhœa among women could be lessened. He thought a great deal could be done by means of lectures to women, both married and single, on how venereal diseases were acquired, their symptoms, and their dangers. Special courses should be held for nurses and midwives. In view of the long hours worked by many women, courses late in the evening should be arranged, even as late as midnight.

Dr. F. J. BARKER contrasted the paucity of cases of gonorrhœa in obstetric practice, as given by Mr. Holland, with the prevalence of the disease 30 years ago as he had seen it, and remarked on the great reduction in the incidence of ophthalmia neonatorum. Before 1900 it was no exaggeration to say that 20 per cent. of the blindness of the world was due to gonorrhœa. The results of treating the disease in women were still discouraging and the greatest hope lay in prevention. Education was the chief need, and would do more than anything else to bring about a reduction of the disease. In cases where the Fallopian tubes were affected he pleaded for a more conservative line of treatment than removal of the tubes, which was done too ruthlessly by a certain school of surgeons. Careful, patient treatment would often lead to restoration of their function.

Dr. W. F. R. BURKE said that a good deal of gonorrhœa was seen in women who were not pregnant, and the facts seemed to point to a great amount of sterility being due to gonorrhœa. Very few would think of relying on clinical signs for a diagnosis of the disease; slides and cultures must be employed. In suspicious cases provocative measures should be adopted. He thought that if gonorrhœa was more often looked for in gynæcological practice it would be more often found.

Dr. C. A. NICHOLL said he had no facilities for making cultures, and he made his diagnosis of the disease by means of smears. He did not hesitate to pack a cervix for a long time; the only reason for not doing it was that abortion might take place.

Dr. B. B. SHARP said he seldom saw gonorrhœa in pregnant women; his experience was mainly with children. For them he found acriflavine inferior to protargol and glycerine, 10 per cent.

Dr. VIOLET RUSSELL, dealing with the question whether active treatment of the cervix was liable to cause abortion, said that at Guy's Hospital during seven years she had not seen one case of abortion which could be attributed to the treatment. There had, in fact, been very few cases of abortion associated with gonorrhœa. It was not the practice at Guy's to pack the cervix, but it was sometimes painted with strong antiseptics. Tampons were used, without detriment. Gonorrhœa was not, in her view, a more severe disease in the pregnant than in the non-pregnant women.

Dr. DOROTHY LOGAN expressed her surprise at the small amount of gonorrhœa met with by Mr. Eardley Holland among pregnant women. In her own small clinic at King's College Hospital the proportion referred to her from the maternity department was higher than he mentioned. She agreed with Dr. Russell's remarks about treatment of the cervix; she also agreed with Dr. Barker about the need for conservatism in treating disease of the tubes.

Dr. T. J. WRIGHT referred to a case of tubal disease in which the patient, being anxious to have a child, refused the surgeon's overtures to remove the tubes. Diathermy aided recovery, and 14 months later he learned that she had given birth to a child. He strongly disapproved of the great readiness of some surgeons to remove diseased tubes.

Dr. MARGARET RORKE thought that in some institutions the cervix was not examined as thoroughly as it should be. The suspected discharge sometimes proved not to be gonococcal, but simply an exaggeration of the normal discharge. She did not think the presence of warts in pregnancy indicated gonorrhœa, and she was certain that gonorrhœa did not cause abortion per se. Dr. Rorke had no criticism of gynæcological surgeons; her general experience of them was that they were conservative and very helpful.

Prof. F. J. BROWNE thought it wise to regard as gonorrhœal long-standing cases with excessive vaginal discharge and severe cervicitis, though they should not be so labelled. Really the only conclusive test of gonorrhœa in the female was her capacity to infect the male. In pregnancy the gonococci lay deep in the glands; they were easily killed if they could be reached with the antiseptics employed.

The CHAIRMAN thought that the decrease in the number of cases operated on for infected tubes, and the decrease of ophthalmia neonatorum, was evidence of the success of the treatment of venereal disease as a whole. He endorsed Dr. Lacey's plea for a close liaison between antenatal clinics and venereal disease departments.

Mr. EARDLEY HOLLAND, in reply, said he found pyosalpinx much less common now than 15 years ago; a similar remark was applicable to ophthalmia neonatorum. He thought the fewness of the recorded cases of gonorrhœa in pregnancy was largely due to many having been overlooked. He endorsed everything Dr. Barker said as to the importance of conservative treatment of Fallopian tubes infected by gonococci. Streptococcal infection, however, often needed operation, because of the risk of general peritonitis.

LONDON ASSOCIATION OF MEDICAL WOMEN'S FEDERATION.

Radium Treatment of Uterine Cancer.

A MEETING of this Association was held on March 27th at the house of the B.M.A., Miss ELIZABETH BOLTON, the President, being in the chair.

Miss M. CHADBURN gave an account of the work undertaken by the Cancer Research Subcommittee since its formation in 1925. It had been decided to concentrate on radium treatment of uterine cancer. The committee had spent the first few months studying technique, and continental clinics had been visited in order that different methods and results could be compared. Dr. Hurdon, the research officer for whose services a grant was given by the Radiological Committee of the Medical Research Council and the British Empire Campaign, had done magnificent work under great difficulties. The treatment was given at the four hospitals—the Royal Free Hospital, South London Hospital for Women, Elizabeth Garrett Anderson Hospital, and the New Sussex Hospital for Women—staffed by women, in coöperation with Dr. Hurdon, who advised them as to technique and followed up cases after treatment. The need for concentrating the work in one centre was becoming more and more apparent, though some cases would still be treated at these hospitals even when the ideal of a central institute had been achieved. It was estimated that £10,000 would suffice to make a modest beginning, and members of the association were urged to attempt to collect this sum.

Dr. HURDON pointed out that during the last few years radium had largely taken the place of surgery in the treatment of cancer occurring in accessible situations. In the Mayo and certain other clinics radium was now used exclusively for cancer of the cervix, even in operable cases. Statistics over a term of years would be necessary before the comparative results could be estimated, but at present it looked as if the practice of radiotherapy would increase. Dosage was now becoming standardised and for the most part adequate doses were given. Dr. Hurdon referred to figures given by Dr. J. Lane-Claypon in her survey of the subject, published by the Ministry of Health. Over a period extending to five years after treatment the results of operation and of radium were about the same—40 per cent. of non-recurrences, whereas radium gave an additional 12 per cent. in cases which were inoperable when first seen. Unfortunately more than half of the patients presented themselves when the growth was already inoperable, usually six to nine months after symptoms had first been noticed. In the series of cases treated by the committee of the Women's Medical Federation only 15 per cent. were operable when first seen. As to technique, a modification of that used by Heyman, of Stockholm, was adopted, since on the whole his results over long periods seemed to be better than those of others. Many continental clinics used this technique, though in France and Italy that of Regaud seemed to be more favoured. It was too early yet to make any claims for the final outcome of treatment in the cases under Dr. Hurdon's observation, but the following results were of interest. 188 cases had started treatment during the period October, 1925, to April, 1928. Of these, 169 were cases of cancer of the cervix, 15 of cancer of the corpus, and four of cancer of the vagina or vulva; 70 per cent. of these cases were living in March, 1928, 30 per cent. being dead. Of the operable cases over 95 per cent. were living and free from symptoms. The immediate mortality of treatment by radium was nil, but certain complications might occur subsequently, such as fistulæ, rectal ulcer or rectal pain, tenesmus, and the passage of blood or mucus. These complications were happily rare—for example, fistulæ attributable to radium had occurred in only two cases in the series under discussion. The following up of patients was most important. Though it was very difficult to trace them, especially in London, only two had been lost sight of.

Dr. H. CHAMBERS pointed out that a final decision as to the most suitable technique could only be made after years of trial. But the work of Prof. S. Russ on experimental animals had been most helpful. He had inserted tubes of radium and then excised a piece of the tumour after varying intervals, testing the viability of the portion excised by transplantation into another animal. In this way the range of effect, which was the most important factor to be considered, could be estimated. Dr. Chambers showed diagrams of the various methods used in different clinics, explaining that the method of inserting a tube into the cervix without any other tubes in the vault of the vagina could not be adequate over a sufficient area. She explained the importance of distributing the tubes, since the range of effect did not exceed half an inch. Soft rays had low penetrating power and caused local sloughing, hence the need for screening. The ideal aimed at was the disappearance of the growth with the minimum damage to healthy tissues, and gamma rays appeared to be the most useful agent available for this purpose.

Prof. LOUISE MCILROY congratulated the Association on the first piece of organised research undertaken by medical women as a group. She commented on the fact that patients in early stages often omit to tell their doctors of the symptoms, since these may be very slight, perhaps a little hæmorrhage and no pain, even when the growth has reached the inoperable stage. For the last two years Prof. McIlroy had ceased operating on cases of cancer of the cervix, using radium instead, with what appeared so far to be excellent results. It was important to disseminate the knowledge that non-operative treatment was available since this might lead patients to seek advice earlier.

Miss G. DEARNLEY said that the improvement in general health after radiotherapy had struck her. She had removed one uterus after treatment and no trace of growth could be found even microscopically.

Miss L. MARTINDALE said that more beds were urgently required. It was often embarrassing to find room for patients to return to hospital for the requisite three doses.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

A MEETING of this Society was held at Liverpool on March 16th, Dr. LEITH MURRAY, the President, in the chair. A paper on

Cystoscopy in Carcinoma of the Cervix,

based on a study of 111 cases, was read by Dr. A. A. GEMMELL (Liverpool). He described the method employed to determine clinically the operability of cases of cervical cancer, and pointed out that cystoscopy added "sight" to "touch" in estimating anterior extension. The appearances seen were described, in their order of gravity, as being: (1) bulging of the floor of the bladder; (2) circulatory changes; (3) transverse ridging; (4) œdema—(*a*) diffuse, (*b*) bullous; (5) desquamation; and (6) malignant invasion—(*a*) ulcerative, (*b*) hypertrophic. There were also other and rarer changes. Dr. Gemmell insisted that the lesions seen were *not* pathognomonic of carcinoma of the cervix, but were nevertheless important when seen just behind the trigone. All his findings had been checked by pathological examination of the growths. In a few instances in which it had been possible to do a second cystoscopy, the order of severity of the appearances mentioned had been confirmed. The bladder symptoms of the patients had been investigated, and it had been shown that in both operable and inoperable groups approximately 50 per cent. of patients had no urinary symptoms, whilst 30 per cent. complained of frequency. It seemed, therefore, that bladder symptoms were no guide to the degree of

bladder involvement. The appearances of the bladder in operable cases (39) and inoperable cases (72) were recounted. Five cases, clinically classed as operable but by cystoscopy classed as inoperable, were found on further investigation to be inoperable. Of seven borderline cases, five were submitted to operation only because the cystoscopic findings were favourable, and their after-histories had justified the interference. It was concluded that early transverse ridging was the sign which denoted the limit of operability. The appearances of the ureteric orifices were no guide to the difficulties likely to be encountered in their dissection, and catheterisation of the ureters was advised for this purpose. In order to determine whether the bladder was adherent to the cervix, Dr. Gemmell recommended the following manœuvre. Before the introduction of the cystoscope, a volsellum forceps is attached to the cervix. While the retrotrigone is being inspected, traction is put on these forceps. When there is no attachment between the cervix and the bladder, the former is seen to slide behind the latter; where attachment exists the bladder wrinkles up. He concluded by discussing the pathology underlying the abnormal signs in the bladder, and quoted figures suggesting a connexion between the cystoscopic appearances and prognosis.

The PRESIDENT said that he knew from personal experience the value of cystoscopic examination as an aid to judging operability in carcinoma of the cervix.

Mr. ROBERT KENNON (Liverpool) congratulated Dr. Gemmell on his intensive cystoscopic study of carcinoma of the cervix, and especially on his interesting observation that with the cystoscope early adhesion to the bladder could be detected by following the movements of the cervix, reacting to the drag on a volsellum forceps. A sign so simple should be of wide application and value. Transverse ridging and bullous œdema, if in the retrotrigonal area of the bladder, had a grave significance.

Prof. MILES PHILLIPS (Sheffield) said that he had found the cystoscope very useful in these cases, and agreed that the ridge and furrow appearance was a sign that the limits of operability had been reached.

Mr. F. A. G. JEANS (Liverpool) agreed that the appearance of the ureteric orifices was no guide to the condition of the ureters in relation to extension of the growth.

A number of cases were described.

Reports and Analytical Records.

ROBB'S NURSERY BISCUITS AND BISCUIT POWDER.

(ALEC ROBB AND CO. LTD., ATKINS-ROAD, CLAPHAM PARK, LONDON.)

THIS well-known product can be used, mixed with milk, as a food for infants from 6 or 7 months of age, and as a nourishing and sustaining food for invalids and persons of weak digestion. The powder is prepared from the biscuits, and when analysed the following results were obtained :—

	Per cent.
Moisture	5·68
Ash	0·74
Fat	6·70
Proteins	10·15
Soluble carbohydrates (including dextrins)	15·70
Insoluble carbohydrates (starch altered by baking)	60·00
Residue surviving digestive processes	1·00

The last-mentioned figure supports the claim of the makers as to the easy and complete digestibility of the biscuits, which are crisp and pleasantly flavoured. When used according to the directions given, the biscuits or powder constitute a useful and valuable foodstuff.

Reviews and Notices of Books.

PHYSICAL CONSTITUTION IN MENTAL DISEASE.

Significance of the Physical Constitution in Mental Disease. Medicine Monographs. By F. L. WERTHEIMER, Associate in Psychiatry, Phipps Psychiatric Clinic; and FLORENCE E. HESKETH, Charlton Fellow in Medicine, Johns Hopkins University. London: Baillière, Tindall and Cox; Baltimore: Williams and Wilkins Company. 1926. Pp. 87. 11*s.* 6*d.*

THIS monograph deals with the study of 65 male patients chosen at random from the Phipps Clinic and the State Hospital, and classed into four diagnostic groups, those predominantly affective (manic depressive), schizophrenic reaction types, organic reaction types, and psychopathic personalities and psychoneuroses. They were studied from two main standpoints, first by observation of various bodily features as a basis for grouping into types mainly following those of Kretschmer, and secondly, according to anthropometric methods, measurements being taken of 53 values following the technique of Martin and Hrdlicka; the attempt was then made to see whether the latter values, or indexes derived from them, could be correlated with the former, and either or both with the mental abnormality. From frequency distribution curves no indication of bimodal or trimodal frequency was found, and no morphological types were found to emerge from the anthropometric measurements. The indices commonly used are unsuitable for mental patients, whose frequent changes of weight interfere with their value. The authors advocate the use of a new index using skeletal points alone, consisting of—

$$\frac{\text{leg length} \times 10^3}{\text{Transverse chest} \times \text{sagittal chest} \times \text{trunk height}} \times 100$$

They do not, however, give exact directions for the taking of these measurements. This index is based on the idea that the relation of trunk volume to limb length may be correlated with morphological types; and it was found to correlate well with the type distribution obtained by observation, the high index values corresponding to the asthenic type and a predominantly schizophrenic mental reaction, while the low index values appear in the pyknic types and the manic depressive cases. The importance of considering age-incidence in such studies is emphasised, this being an important source of error.

The authors suggest using the terms syntropic and idiotropic for the groups of prepsychotic personalities tending to correspond with the morphological types, instead of Kretschmer's cycloid and schizoid, which unduly stress an uncertain relationship to psychosis. They point out that premature correlation of such types with endocrinology is unwise until more accurate knowledge is available. The introductory chapter on the history of the study of types is particularly valuable.

CLINICAL PATHOLOGY.

Second edition. By P. N. PANTON, M.A., M.B., Clinical Pathologist to the London Hospital and Director of the Clinical Laboratories; and J. R. MARRACK, M.A., M.D., Chemical Pathologist to the London Hospital. London: J. and A. Churchill. 1927. Pp. 459. 16*s.*

THIS volume is long overdue. Time was when Panton and Clinical Pathology were almost synonymous in the mind of the average medical student; but 15 years is a long while between editions, and in these latter days the inflow of works on the subject from the west can only have been equalled by the outflow of gold in the opposite direction. The present volume is a worthy successor to the first edition, and the association of Dr. Marrack with Dr. Panton is a recognition of the growing importance of chemica

pathology. In the preface to his original edition Dr. Panton stated "where several methods for the same object are in use, one, or at most two, are described in full: the remainder are omitted altogether." This wise principle has been followed in the present edition and for the most part with the happiest results. In the section on the examination of the cerebro-spinal fluid there would, however, seem to have been room for some test for protein between the crudity of the alcohol method and the finesse of the quantitative technique of Wu as modified by Hewitt; Pandy's test and some of the nephelometric methods, for instance, are simple and useful. No mention is made of the extreme desirability of direct matching before transfusion. In view of the difficulty of obtaining satisfactory samples of Leishman's stain the inclusion of Wright's method for staining blood films might have been found useful. These are small matters which can easily be set right. The book as a whole is admirable—clear, concise, and to the point. The sections on the indications for and the interpretations of the various procedures described are judicious, the general sanity of outlook is well shown in the question of vaccines, and the volume is sure of a wide popularity among medical students and practitioners alike.

AIDS TO OPHTHALMOLOGY.

Seventh edition. By N. BISHOP HARMAN, M.A., M.B. Cantab., F.R.C.S. Eng., Senior Ophthalmic Surgeon, West London Hospital. London: Baillière, Tindall and Cox. 1928. With 164 illustrations. Pp. 236. 3*s.* 6*d.*

THIS excellent little book will be very hard to supersede. Though small in size and cheap, it is a reliable vade mecum for the student and contains all that a practitioner who does not profess to have specialised in eyes, or to be an authority on the fundus, is likely to want. Even if he possesses a larger work, it will be well worth his while to purchase this one where, besides a good account of the ordinary diseases and of the art of refraction, he will find some practical hints which he is not likely to find elsewhere—e.g., how to avoid a corneal abrasion when removing foreign bodies, and how to preserve watery solutions of alkaloids used in eye-work. There are two new chapters in this edition, one on eye-signs of body disease, and the other on the blind. The chapter on glaucoma is enlarged, but on a subject over which there is still considerable controversy the necessity of being somewhat dogmatic in a book of this size is plain. One of its great merits is that it can easily be carried in the pocket. It would be a pity to enlarge it materially, but one addition would be welcome, and that is a list of the few drugs which the author habitually uses, with their appropriate strengths.

GIDEON ALGERNON MANTELL,

Surgeon and Geologist. By SIDNEY SPOKES, M.R.C.S. London: John Bale, Sons, and Danielsson. 1927. Pp. 263. 12*s.* 6*d.*

THIS is the biography of a doctor whose bent lay in geology, especially that of the Sussex Downs. The form does not make for easy reading—it is a tissue of extracts from letters, papers, and other documents, knitted together with explanation and comment—but when the reader becomes accustomed to it he makes contact with the tragedy of a disappointed Brighton practitioner who never had quite the courage of his aspirations, who permitted circumstance to cripple him figuratively in his creative work and literally in his spine, and who died after years of frustration and suffering, leaving fragments of brilliant work where there might have been a coherent whole. Lovers of the South Downs will be able to find illuminating side-lights on the life of these hills a hundred years ago, and the geologist will discover much to interest him.

THE POLYNUCLEAR COUNT.

By W. E. COOKE, M.D., Director of the Pathological Department, Royal Infirmary, Wigan; and ERIC PONDER, M.D., D.Sc., Associate Professor of General Physiology, New York University. London: Charles Griffin and Co., Ltd., 1927. Pp. 79. 6*s.*

THIS little book contains what is probably the best exposition of the rationale, technique, and interpretation of the Arneth count as yet made available in the English language. Though some might contest the statement, probably most of those in this country engaged in the study of the blood would agree that the Arneth count has not yet established its place in clinical hæmatology. While they make no undue claims for the procedure, the authors of the present work are of the opinion that if properly carried out it is capable of affording valuable information, in particular in regard to the activity or otherwise of foci of chronic or subacute sepsis; and they make out an excellent case for their thesis. So far the chronic infection in which the Arneth count has mostly been used is pulmonary tuberculosis. While showing plainly the help which the count can afford in following the course of a tuberculous infection the authors also draw attention to its uses in other directions—e.g., the presence of septic foci in teeth or tonsils. A suspicious tonsil or tooth can in their opinion be condemned if the count shows a shift to the left (implying a preponderance of youthful polynuclear cells), but should on no account be condemned if such a shift is wanting. That the Arneth count has failed to take an important place in medicine is partly to be attributed to faulty technique. The authors describe a simple and effective technique within the reach of everyone possessed of a bottle of Giemsa stain and a microscope. The book is produced in the first-rate style of a technical manual.

SANITARY LAW AND PRACTICE.

Sixth edition. By W. ROBERTSON, M.D., F.R.C.P. Ed., D.P.H., Medical Officer of Health, Edinburgh; and C. PORTER, B.Sc., M.D., M.R.C.P. Ed., Barrister-at-Law, Medical Officer of Health, St. Marylebone. London: Sanitary Publishing Co., Ltd. 1928. Pp. 815. 21*s.*

THIS book first saw the light in 1904. It has long been a favourite with candidates for the public health diploma, and generations of students brought up on it have grown into well-informed officers. Its chief value lies in the arrangement by which under each subject heading—e.g., food, dairies, infectious diseases—precise information is given as to what is done by the official to carry out the duties placed upon him, and to make use of the powers he possesses. The writers claim to condense the legislation; they do more than this, they translate the legal technology into intelligible English. Perhaps the principle could be carried further, and the legislation on disinfection, for instance, taken out of the general section on infectious diseases and placed conveniently in front of the text dealing with the practice of disinfection. The book is probably not intended by its authors to give the student a conception of the relative importance of the several branches of public health work. Thanks to the work of an earlier generation of health officers, environmental hygiene has improved out of recognition in the matter of water-supplies and sewage systems, and the book contains no hint that venereal diseases present problems more urgent than do (say) canal boats. No mention is made of the welfare work in factories of which the future will have much to say, and the title "social hygiene" does not appear. But apart from what may be an intentional narrowing of scope and a certain greyness of diction, illuminated at times by a graphic sentence, it would be difficult to select for praise any special section where all are so good. The section on vital statistics,

however, stands out in its treatment of a difficult subject in a manner at once practical, comprehensive, and intelligible; and there is a masterly analysis of the complex sanitary legislation embodied in the London County Council (General Powers) Acts, 1893–1927.

We may congratulate the authors on the feat they have performed in digesting the ever-growing volume of public health legislation and in affording material for comparative study of English, Welsh, Scottish, and Irish sanitary law. Medical officers of health will find the book extremely valuable for reference.

PHARMACOGNOSY AND MATERIA MEDICA.

By HOMER C. WASHBURN, Ph.C., B.S., Professor of Pharmacy and Dean of the College of Pharmacy, University of Colorado; and WALTER H. BLOME, Ph.C., M.S., Director Scientific Laboratories, Frederick Stearns and Company, Detroit. New York: John Wiley and Sons. 1927. Pp. 585. 25*s*.

PHARMACOGNOSY, in the traditional sense, is a subject which, if not dying, is at least fighting a retreating battle. The laboratory chemist and the maker of synthetic drugs have largely replaced the hunter of herbs. But what is left of the vegetable world in medicine needs the careful description which it gets in the book before us. Written in the first instance for practical pharmacists, the book is not devoid of interest for the practitioner of medicine. The authors decry the spending of much time on microscopical structure of drugs, and adhere to the old-time arrangement according to the natural order of the plants from which the drugs are derived. In two of the aims the authors have succeeded well: (1) to leave in the mind of the student a clear conception of important features and facts concerning plant and animal drugs; and (2) to make a work of safe and ready reference for the busy pharmacist, whether he be retailer, wholesaler, or manufacturer. Great care is taken to make pronunciation clear by symbols which at times place the accent unfamiliarly to English readers. Derivation, too, is accurately given, although we incline to doubt the origin of poplar (pōpulus) from the "arbor pōpuli" planted along the public ways of Rome. The illustrations do not quite rise to the level of the text.

STANDARD METHODS.

By AUGUSTUS B. WADSWORTH, M.D. London: Baillière, Tindall and Cox. 1927. Pp. 704. 34*s*.

THIS book is a complete exposition of the methods in use in the laboratories under the administration of the State Department of Health in New York. It differs from the usual manuals of laboratory method in the omission of staining procedures, though formulæ are given; the reduction to a minimum of general instruction in elementary technique; and the full and detailed description of methods—e.g., serum production—which are absent from most manuals. A good deal of the material presented is extremely novel in a publication of the sort. We would instance the chapters upon administration and on the methods used in the research, publications and library department. Whilst no administrator is likely slavishly to follow the methods set forth, their perusal will nevertheless be found to be stimulating and suggestive. It may be a matter of amazement to any who are inclined to look upon the laboratory as something of a new-fangled luxury and not an essential adjunct to medicine to realise that the very progressive institute from which this volume comes employs, besides the director and assistant director, a staff of 5 bacteriologists, 1 pathologist, 5 chemists, 1 veterinarian, 15 assistant bacteriologists, 2 assistant serologists, 2 assistant pathologists, 9 assistant chemists, 12 laboratory assistants, 4 laboratory apprentices, 52 technical assistants and helpers.

We can thoroughly recommend this volume to bacteriologists and directors of pathological institutes as a mine of useful information. To any who are called upon to design laboratories it will be a veritable godsend.

TREATMENT BY MANIPULATION.

Being the second edition of "Manipulative Surgery." By A. G. TIMBRELL FISHER, M.C., F.R.C.S., Surgeon to the Seamen's (Dreadnought) Hospital, Greenwich. London: H. K. Lewis and Co., Ltd. 1928. Pp. 200 9*s*.

THE second edition of Mr. Fisher's book appears under a new title, but differs from the first chiefly in the addition of some case-histories and considerable enlargement of the sections dealing with osteopathy, tennis-elbow, chronic arthritis, and lesions of the sacro-iliac joint. All these subjects are attracting a good deal of attention from orthopædic and general surgeons at this time, and they demand the space devoted to them. As regards osteopathy Mr. Fisher is right to point out the evil results, in some cases, of manipulations carried out by ignorant quacks, who are incapable of making a preliminary diagnosis. Tennis-elbow is a subject that needs all the light that can be thrown upon it, for its pathology is by no means satisfactorily explored or established, and its unsuccessful treatment is often made a reproach to surgery. The pendulum has swung away from the teaching of Hilton, and other surgeons besides Mr. Fisher are getting gratifying results from the treatment by limited movement of inflamed joints, even in such cases as tuberculous disease of the hip in young persons. As to lesions of the sacro-iliac joint, the experience and consequently the views of surgeons differ, but it appears that surgical opinion is coming round to the view that inflammatory and traumatic lesions of this joint are not so rare nor so dangerous as used to be thought. This edition will no doubt be even more welcome to the profession than its predecessor.

SCHOOL COURSE IN HYGIENE.

By ROBERT A. LYSTER, M.D., Ch.B., B.Sc. Lond., D.P.H., County Medical Officer of Health, Hampshire; Lecturer in State Medicine at St. Bartholomew's Hospital, London. London: W. B. Clive, University Tutorial Press, Ltd. 1927. Pp. 234. 3*s*. 6*d*.

THIS little book is an adaptation for school use of the author's "First Course in Hygiene" (now in its seventh edition), from which the more advanced portions have been eliminated, but the distinctive features retained. Human anatomy and physiology are presented along with hygiene and public health as associated and dependent parts of a whole, and practical work is introduced where suitable at the ends of chapters, the experiments being designed to illustrate essential principles. For the teacher's use a number of test questions on each chapter is included. The text is an admirable presentation of what may be regarded as the older type of instruction in hygiene; the information given is solid, the writing in places remarkable for its clarity, and the facts, as a rule, well selected. But whereas much of the text on hygiene might be read with interest by the average child, some of the physiology and anatomy is further removed from the facts of everyday life and experience, and it is difficult to avoid the conclusion that the book does not wholly carry out the aims of the recent "Handbook of Suggestions on Health Education," which contemplates teaching in the form of lectures or talks by the teacher. Should the teacher not be interested in the subject the class reading of Dr. Lyster's book would be a useful alternative, while for individual study by a young child the book is good, although it could be better. Practically all the illustrations are beyond cavil; a few are exceptionally good.

THE LANCET.

LONDON: SATURDAY, APRIL 14, 1928.

STEREOSCOPIC RADIOGRAPHY.

THE correct explanation of the way in which a solid is seen in relief was given as long ago as 1833 by Sir CHARLES WHEATSTONE, although he was contradicted by Sir DAVID BREWSTER and other orthodox physicists of his time. WHEATSTONE induced FOX TALBOT, one of the inventors of photography, to use the new art for taking stereoscopic pictures, with results which are now well known. When the discovery of X rays, in 1895, made it possible to see shadows of the various internal organs of the body, it was soon realised that the radiographic pictures so obtained often failed, because of their lack of relief, to give just the information required of them; and this led radiologists to apply the laws of stereoscopy to X ray photography. The subject has recently been developed by Dr. WILLIAM COTTON in a brochure entitled "Perspective in Relation to X-ray Interpretation." It may not be out of place to restate here some of the conditions essential to obtaining an X ray picture in relief. First of all: binocular vision is necessary for stereoscopic effect. The view of any solid body as seen with the right eye is slightly different from that seen with the left, and it is the combination of these pictures which results in a view showing relief. In photographic stereoscopy, two cameras placed side by side replace the observer's eyes and photographs obtained simultaneously in this way are combined subsequently to give a view of the subject in relief. Correct stereoscopic relief is obtained if the right and left eyes of the observer look only at the views appropriate to them. In radiography, the two slightly differing pictures are usually obtained by exposing two X ray films in succession at the same place relative to the subject and moving the X ray tube between the exposures. The fact that the two views are not simultaneous introduces a grave drawback where the stereoscopy of a moving organ is required.

Mention has recently been made in our columns of an orthostereoscopic apparatus designed by Mr. F. E. BORNHARDT, in which the problem of simultaneity has been solved by utilising every recent device in the manufacture of tubes and screens. Robust hot cathode X ray tubes, efficiently water-cooled to withstand heavy electric discharges, are now made so small that two of them can be placed close enough together for stereoscopic reproduction, thus obviating the shifting of the tube which was necessary with the earlier and larger type. The two tubes are connected to the same alternating current transformer, and current is allowed to flow first through one tube and then, on its reversal, through the other. The rays from both fall on the same fluorescent screen. The alternating current reverses 100 times each second, and during this period the same number of views of the subject will fall on the screen, consecutive pictures forming a stereoscopic pair. To obtain a stereoscopic effect it is necessary to ensure that the observer's right and left eyes see only those views on the screen which are appropriate to them. The fluorescent screen is therefore viewed through circular diaphragms carrying apertures and revolving in synchronism with the discharges through the X ray tubes. The diaphragm before the observer's right eye only allows a view of the screen during those periods when the X ray tube on his left hand side is illuminated; between these periods the left eye sees the screen picture made by X ray tube on the observer's right hand. The rapidity with which the views repeat themselves gives to each eye a continuous impression, that received by the right eye combining with the slightly different view falling on the left one to give stereoscopic relief.

The new instrument appears to mark a definite advance in radiography. The principle of direct stereoscopic screening is not new in itself; an apparatus was evolved some years ago which made use of a gas-filled tube with two anticathodes contained in the one bulb, but connected to two coils and a special commutator; the viewing shutters were operated by hand, but the smoothness and rapidity with which the different pictures follow each other in the present model has removed one of the main defects of the older methods. It must be realised, however, that success will depend upon the efficiency of the fluorescent screen and its freedom from phosphorescence. The orthostereoscope has already been installed in some continental clinics, and we shall await with interest the results obtained with it in this country.

THE RETICULO-ENDOTHELIAL SYSTEM.

DURING the last 10 or 15 years the term reticulo-endothelial system has become increasingly popular and is now firmly established. It embodies a conception which is by no means new though it has only been defined with any degree of rigidity within comparatively recent years. In the earliest days of histology the presence of mononuclear cells was recognised in the connective tissue in various parts of the body. For the most part they are few in number and apparently unimportant but in certain conditions, particularly in some forms of inflammation, they appear in enormous numbers and in a bewildering variety of form. The origin and differentiation of these elements has been closely studied by numerous observers. Each new entrant into the field has enriched the literature with at least one new name, and the whole subject has become as complex and difficult as could possibly be imagined. How many types of mononuclear cells occur in the tissues, and whether they are derived from wandering blood cells, from endothelium, or from primitive mesoblastic cells, is far from being settled, but certain facts have emerged in recent years which help to bring some semblance of order into at least a part of this subject. METCHNIKOFF was really the first to recognise that in many situations the fixed tissue cells, as distinct from the cells of the circulating blood, have remarkable powers of phagocytosis. He described a system of macrophages, widely distributed in the body, which have in common the power to phagocytose and metabolise red and white blood corpuscles. Of course, practically all the cells in the body have this function, but as ASCHOFF has pointed out, the macrophages of METCHNIKOFF differ from other cells in the intensity and frequency with which they perform it. The matter was carried a step further by RIBBERT who, using the method of vital staining, showed that after the injection of solutions of lithium carmine into the circulation the dye was found in the cells in only certain places. His work has been continued by many others and it is now

clear that there exists a type of cell, distributed irregularly in various parts, which reacts similarly to the presence of several dyes. It is possible, then, to group together in this way the reticulum cells of the spleen and lymph nodes, the cells lining the sinuses of the spleen, lymph nodes, bone-marrow and liver, and various wandering mononuclear elements, the monocytes of the spleen and the histiocytes, clasmatocytes, or leucocytoid cells of the tissues. These cells constitute the reticulo-endothelial system, and the more they are studied the clearer does it seem that they do in fact function as a definite unit. Physiologically one of their main activities seems to be concerned in the metabolism of iron—they play an important part in the phagocytosis of red blood corpuscles and in the formation of bile pigment, though the actual groups of cells concerned vary in different animals. In mammals, for example, the spleen appears to be the chief phagocytic organ, whereas in birds the spleen and bone-marrow contain comparatively few reticulo-endothelial cells, the liver being the organ in which they are congregated. And the system has other metabolic activities. In diabetes and in conditions of cholesteræmia the cells tend to store up cholesterol esters—and in Gaucher's disease, of which the obvious manifestation is splenomegaly, the phagocytes of the spleen proliferate and become enormously distended with a phosphorus-containing substance, probably a protein. In infections, again, the reticulo-endothelial system seems to have an important function in the defensive mechanism of the body—not only do its cells phagocytose invading bacteria and protozoa, but there is a good deal of evidence that they are closely concerned in the formation of antibodies. A great amount of work remains to be done in clearing up the many problems which a scrutiny of the recent work reveals. But, however it may be modified in the future, there seems little doubt that the main doctrine of the reticulo-endothelial system will remain unchallenged.

THE TREATMENT OF EMPYEMA.

THERE is still some difference of opinion on the best method of treating empyema in children, and particularly on the relative merits of open and closed drainage and the value of irrigation in promoting closure of empyema cavities. In the first of three recent papers dealing with this subject Dr. D. W. Parker[1] advocates the closed method. Under novocaine anæsthesia he makes an incision down to the intercostal muscle, which he perforates with a pair of scissors. Through this opening he introduces a 24–27 F. catheter which has been previously pushed through a hole in the middle of a 3-in. square of rubber. The rubber makes a shield 1½–2 in. from the tip of the catheter, and as soon as pus begins to flow the catheter is clamped, the skin incision is closed, and the rubber dam is fixed to the chest wall with adhesive plaster. A syringe is then attached to the catheter, the pus is aspirated, and for the first 24 hours after operation the cavity is irrigated two-hourly with 1 per cent. chlorazene, or Dakin's solution; a 30 c.cm. syringe is used for this purpose and not more than 60 c.cm. of fluid is injected without being withdrawn again. Between aspirations the catheter is attached to a tube which hangs down into a water-containing receptacle under the bed, and this tends to syphon out pus from the chest. Dr. Parker considers that irrigation is a specially important part of the treatment, because it helps to dissolve fibrinous or partly organised pleural adhesions, whilst the syphonage assists re-expansion of the lung. He claims that this method is painless and affords adequate drainage without subjecting the patient to serious shock. An account is given of 18 cases in children under 10 years treated on these lines with only one death. Two of the children were under one year old, six between 1 and 2, and four between 2 and 3. As a rule the tube was left in for 15–20 days. Further evidence in favour of early closed drainage has been collected from many sources by Dr. J. M. Hayes,[2] who thinks it desirable both in children and adults. Early open drainage, he says, causes pneumothorax, disturbs the mediastinal structures, lessens the vital capacity of the lungs, and impedes re-expansion. Closed drainage, besides avoiding these risks, is more comfortable for the patient. The method which he recommends is as follows: A 22 F. catheter is introduced into the lowest part of the cavity by means of a trocar and cannula, and is fixed by four strips of adhesive plaster, two extending vertically and two horizontally, so that the opening about the tube is tightly closed and entrance of air is prevented. Irrigation with Dakin's solution is then done with advantage every two hours during the first four days until the cavity has considerably decreased in size. After this Dr. Hayes considers there is no harm in open drainage by rib resection over the cavity. In a third paper Dr. C. E. Farr and Dr. M. L. Levine[3] review 371 cases of empyema in children under 10 years old. The most striking fact which emerges from their paper is the importance of age in relation to incidence and mortality, the curves of both these factors reaching their apex in the first year and then falling steadily until the age of 9. They consider that of all factors in prognosis age is the most important. Next to this is the kind of infection and the virulence of the organism, which may vary from year to year. In 134 cases of this series in which the organism was determined 73 were pneumococcal and 23 streptococcal, each with a mortality of 26 per cent.; 6 were staphylococcal, with a mortality of 66 per cent.; 12 were mixed infections and 20 were sterile, the mortality in the two last groups being 42 and 30 per cent. respectively. Pneumococcal infections were comparatively rare (22 per cent.) during the first year, when mortality is high, compared with later years (60 per cent.). As a possible aid to prognosis leucocyte and differential counts were done in 104 cases, but the results were very variable and no prognostic deductions of value could be made from them. All cases were first treated by aspiration, both for diagnosis and drainage. In those which occurred during acute pneumonia, aspiration was continued until the condition of the patient favoured open drainage. Intercostal incision or rib resection, followed by open drainage, was used ultimately in all but three, whose end would only have been hastened by operation. Closed drainage was not employed at all. Farr and Levine consider that death from empyema in children is almost always due to the debilitating effect of previous illness or to other complications, which include pneumonia, rather than to the empyema itself. They think that the various methods of incision and drainage have very little influence on prognosis compared with other factors, such as the age and general resistance of the patient and the virulence of the infection.

In surveying this expression of recent American opinion, we should feel for our part that the decision

[1] Boston Med. and Surg. Jour., 1927, cxcvii., 653.

[2] Minnesota Medicine, 1928, xi., 16.

[3] Surgery, Gynecology, and Obstetrics, 1928, xlvi., 79.

to employ an open or closed method of drainage is not of such moment to the patient as the choice of the most favourable time to perform the operation. Whether the patient is to be left with a large cavity which will not heal without further surgical help, whether, in fact, he is to become a chronic invalid, depends scarcely at all upon whether an open or closed method of drainage has been used, but upon the presence or absence of adhesions round the periphery of the empyema which are strong enough to prevent the lung from collapsing when the cavity is opened. Aspiration should be employed until the surgeon is reasonably sure that this state of affairs exists. The removal of thick pus with a needle is usually a sign that it is safe to open the cavity. When only turbid fluid is withdrawn operation had better be postponed. In this stage also the sudden collapse of the lung which the operation would bring about has other dangers for the patient beyond that of leaving him with a chronic empyema cavity; it may suddenly flood the circulation with a dose of toxin with which he is unable to deal. Early operation in empyema is immediately risky and may be the cause of serious later trouble. Many surgeons will agree with Farr and Levine that the method of drainage has very little significance upon prognosis. The various closed methods of drainage have all been devised with the idea of making this discharge of pus easy while the ingress of air into the chest during inspiration should be hindered. As a rule, there is scarcely any advantage to be gained by using them; sometimes indeed they impede, to some extent, the exit of pus. A simple moderately sized drainage-tube cut almost level with the skin round which the tissues are snugly sutured and covered with a thick dressing is very satisfactory. With coughing and other expiratory efforts pus can be freely expelled, but during expiration the dressing is sucked tightly against the open end of the tube, thereby occluding it. Particularly when the gauze is soaked with discharged pus does this valvular mechanism come into play. The simplest method seems here the best. Whether for drainage an intercostal incision should be made or a piece of rib removed does not seem to be very material; it should be remembered, however, that when aspiration has shown pneumococci alone to be present, it will sometimes be possible to avoid any operation whatsover. Repeated aspiration may suffice to bring the case to a successful conclusion.

INTERNATIONAL CANCER CONVENTION.

WE announced some weeks ago that the British Empire Cancer Campaign was to hold an international convention in London in July, and we are now able to give a provisional account of the programme. On Monday, July 16th, the delegates will be received by the President, Sir John Bland-Sutton; the following day will be given up to general discussions on the relative value of surgery and radiation in the treatment of cancer of the cervix, rectum, buccal cavity and breast, and on the ætiology of cancer; whilst Wednesday, the 18th, will be devoted to sectional discussions and a reception by the Duke of York. The subjects to be considered by the various sections include the biological effects of radium and X rays; occupational cancer; the relations between clinical malignancy, histological characters and response to treatment; diagnostic methods; the geographical and racial prevalence of cancer; and the public action that should be taken to control the disease. The section of surgery will have a session on cancer of the stomach, and there will be a general discussion of chemotherapeutic methods, with special reference to lead, by the Convention as a whole. Those who wish to contribute to the discussions should communicate with Mr. Cecil Rowntree, chairman of the executive subcommittee, at 9, Upper Brook-street, London, W. 1. It is hoped to arrange for operations and demonstrations at various centres every afternoon during the meeting.

Annotations.

"Ne quid nimis."

THE CAUSATION OF GLAUCOMA.

GLAUCOMA is essentially an increase in the intra-ocular fluid pressure, greater than the inextensible outer coat of the eyeball is able to sustain without involving serious injury to the visual mechanism which it encloses. The fluid content of the eyeball is in either constant or intermittent flux, the ingress depending either, as Treacher Collins first taught, on the secretory activity of the ciliary body, or, as W. E. Duke-Elder maintains,[1] on the osmotic interchange of fluid through the capillary walls, whilst the egress depends, apart from this same osmotic interchange, on the efficiency of the drainage system. In normal eyes this is so perfect that any extra influx of fluid into the eyeball is at once compensated for by an extra outflow of an equivalent amount. It was at one time supposed that the cause of glaucomatous rise of tension is to be found in an increased influx of fluid, and recently this idea has been revived by E. P. Fortin.[2] On the other hand, the view till lately almost universally held is that the cause of high tension is an interference with the drainage system by the partial or complete closure of the angle of the anterior chamber, rendering it difficult for the aqueous to have access to Schlemm's canal. Nevertheless, Duke-Elder, in the work already referred to, inclines to the opinion that obstruction to the exit of fluid is a secondary or adjuvant factor in the ætiology of the disease. In chronic glaucoma adhesions of the periphery of the iris to the back of the cornea have been demonstrated and it is generally believed that such adhesions are facilitated by a large crystalline lens, a relatively small cornea, a swollen ciliary body, and, generally speaking, by anything which increases the pressure from behind the iris, causing the anterior chamber to be shallow. It is in these cases that the trephining operation is most likely to be successful. In glaucoma secondary to iritis or to some other primary cause the matter is not so simple. We must attack the primary condition. There are yet other cases which may show a glaucomatous cupping of the disc and a progressive contraction of the visual field without a shallow chamber and without any demonstrable rise of tension. Long ago Schnabel called these cases "cavernous atrophy of the optic nerve." Others have observed similar cases of late years, and it is difficult to understand how a trephining operation could do them any good. But borderland cases also occur in which periods of raised tension may be few and far between but do occur. We shall have to recognise that the term "glaucoma" is a wide one covering cases of varying pathology and possibly requiring varying treatment. Meantime, with regard to the great majority of cases, the weight of opinion among ophthalmic surgeons in this country will coincide with the views put forward by Mr. Leighton Davis in the article which appeared in our columns last week. It is well to remember, however, that though the trephining operation is an excellent one it can scarcely be deemed perfect. No operation in which the failures amount to as many as 9 per cent. can be considered as such, and no ophthalmic surgeon can undertake an operation for glaucoma without a certain amount of anxiety as to the result. In these circumstances, and in view of the number of cases in which any operative treatment is for one reason and another impracticable, we do not think that the importance of treatment by eserine should be minimised. In some cases it is capable of preventing the vision from deteriorating for years; though this may be exceptional, and though the practice of

[1] Recent Advances in Ophthalmology (see THE LANCET, 1927, ii., 922).

[2] Semana Médical, 1927, ii., 663.

relying upon it in cases in which it fails to reduce the tension to normal or to prevent a progressive contraction of the field can only be condemned, yet there are few cases of glaucoma in which its use as a temporary expedient is not called for. The pathology of the disease is still a matter of debate, and it would be a mistake at the present time to be dogmatic about it.

THE ÆTIOLOGY OF ALCOHOLISM.

In spite of a steadily decreasing consumption of alcohol in this country, of which there is further evidence in the figures for last year just published by the United Kingdom Alliance, it is arguable that from the national standpoint the drink problem is more serious to-day than it was 15 years ago. A country which is working on a reduced margin of industrial strength can less easily afford the inefficiency for which alcoholism is partly responsible. It may be admitted that love of sport and the open air, together with easier relations between the sexes, exerts an influence against intemperate drinking, and that "ordinary people" in this country are becoming less and less tolerant of drunkenness. But there remains a large class of people whose alcoholism calls for treatment, and it is important that the causes of their failing should receive the most careful study. The problem is one primarily for psychologists and was discussed at a meeting of the Section of Psychiatry of the Royal Society of Medicine and the Medical Section of the British Psychological Society, reported on p. 704 of THE LANCET last week.

As Dr. Bernard Hart remarked in his opening paper, the question why men take alcohol to excess is really identical with the question why they take it at all, and to this various answers have been given. One of the most obviously acceptable is that put forward by Dr. Crichton Miller, who said that alcohol was taken to modify the feeling-tone, whether this resulted from bodily or emotional experience. The two groups into which Kretschmer divides chronic drinkers are fairly well recognised by laymen as well as doctors: the type which drinks for social reasons and the type which drinks to get drunk; the pyknic cyclothymic jovial type and the schizoid, difficult and nervous type to whom alcohol is a drug. Naturally, these two groups have no hard-and-fast line between them, and many persons undoubtedly gravitate from the first to the second, but from a psychological point of view the distinction may be important. Granted that men take alcohol to ease the pressure of life on their minds and bodies, the question arises why they sometimes fall into alcoholism. Dr. J. A. Hadfield suggested that alcoholics were persons who found the responsibilities of life too much for them and used alcohol as a means of evasion. This is probably true for most drunkards, but not everyone would agree that all of them are emotionally immature in exactly the way he suggested—that they had never felt the confidence and sense of protection that every child ought to feel, and that they suffer from a chronic fear of life from which they seek to escape. Support may, however, be found for Dr. Hadfield's view in a recent and helpful survey of the field by Dr. Ernest Snowden,[1] who cites the case of a man whose mother had brought up her family to avoid showing affection. This unsound psychological training led to mental conflict when he married, and he used alcohol as a means of removing the inhibitions which prevented him from feeling marital affection. A realisation of the part which this kind of conflict may play in driving persons of a certain type to drink will help towards an understanding of the apparent obscurities of the psycho-analytical point of view. This was expounded by Dr. E. Glover, who dealt with the second or schizophrenic type of Kretschmer very thoroughly from the Freudian reductive standpoint. The Freudian sees in the confirmed drunkard a person who is attempting to extricate himself from an impasse. He takes flight from environmental reality into phantasy liberated by the dulling of the higher centres. This phantasy corresponds to definite layers of psychical development, which in the normal person are buried deep or assimilated into his adult personality, but which come into their own when the primitive impulses are released and dictate conduct appropriate to various stages of childhood. The interest of the Freudian view is its insistence on internal, instinctual frustrations as the real cause of alcoholism, and its relegation of social, habitual, and economic factors to the position of accessories after the fact. The man is supposed to find in drink a substitute for enjoyment experienced through the mouth, "oral erotism," the libido satisfaction of a baby at the breast. He has regressed to this stage of sexual development, with the result that his emotional consciousness is flooded with "castration anxiety," the protest of an inner insufficiency or impotence, or of a thwarted instinct towards self-expression. According to the psycho-analysts it is to drown castration anxiety, to short-circuit sex, that people drink to excess. Something like this may be true of the second class of drunkards; whether it is true of the first is more doubtful. It is not impertinent to suggest that the analyst must see very many more of the schizophrenic class in his consulting-room than he does of the sociable class, whose excesses exact more material penalties and who are less accessible to analysis when their breakdown is mental. As Dr. Hart pointed out, a number of working men take drink simply from a craving induced by habit, with no urge towards a refuge from reality other than the need to relax after a hard day, whilst some investigators maintain that a normal man may become an alcoholic quite fortuitously. On the other hand, Dr. W. H. Stoddart cited cases in which the need for alcohol was felt imperatively before alcohol had ever been taken. Dr. Crichton Miller gives low blood pressure as a frequent predisponent towards drunkenness, a condition by no means peculiar to the repressive or schizophrenic temperament.

The chief application of ætiological knowledge lies in prophylaxis. Dr. E. Mapother was optimistic enough to hope, in the light of the great reaction against social drinking through which this country has been passing for several decades, that alcoholism in a hundred years' time would be chiefly of interest to historians. Nothing in the discussion supported the view that alcohol itself is worthy of abolition. The consummation most Englishmen desire is that the nation should be educated in its wise use, and towards this the most important contribution is likely to be made by those responsible for education, including those who specialise in the psychological training of children, and those who, like Dr. Snowden, approach the subject from the psychological angle. If the child is enabled to face life courageously, the adult will not seek escape from it in alcoholism, or any other neurosis.

[1] St. Bartholomew's Hosp. Jour., February and March, 1928.

HEALTH EDUCATION.

Most people agree that public health can be improved by instructing the community in what are called the simple laws of hygiene; the difficulty is to determine how this instruction should be given. In schools it is possible to inculcate useful habits and information without much difficulty, and a certain amount is being done in this way; but the adult, whose present health is of immediate importance, is hard to approach. Among organisations for the purpose the Industrial Health Education Society has been especially happy, perhaps, in getting together the right sort of audience and obtaining an interested hearing. From the latest annual report,[1] which has just appeared, we learn how those employed in this or that industry—coal-miners, cotton operatives, bakers, tinplate manufacturers, woodworkers, and builders—have been assembled to hear talks from

[1] Annual Report for 1927 of the Industrial Health Education Society, 84, Kingsway, London, W.C.

experts and to discuss with them the risks to health peculiar to their everyday work. Thus the personal interest is aroused, as anyone must recognise who has been present at some village institute in a mining area and has heard discussions on miners' nystagmus and pithead baths, or in a Lancashire hall when mule-spinners' cancer has been debated. The society began its work in Scotland, but during 1927 its headquarters were moved to London and its activities were spread over the south and the west. The demand for lectures seems to be already greater than can be supplied from the society's funds. Hitherto, through contributions made from the Miners' Welfare Fund, the coal-mining community has been able to command most attention. But workers in other industries are realising that health is an inheritance requiring to be guarded against sickness and disease incidental to specific occupations. Though the society doubtless owes part of its success to the fact that teaching on occupational risks can be fairly clear-cut and dogmatic as compared with instruction about health in general, a special tribute is due to the competence and energy with which the work is being carried out.

BORAX AS A MOSQUITO LARVICIDE.

IN warm climates, when water is stored for purposes other than drinking, regular oiling of the surface is usually needed to keep it free from mosquito larvæ. This is an expense and, when the cost is minimised by employment of cheap (and generally unreliable) labour, an anxiety to those responsible for public health. R. Matheson and E. H. Hinman [1] have found that the addition to such water of commercial borax in the proportion of 1·5 g. to the litre, or about an ounce in six gallons, forms an efficient larvicidal solution, since young larvæ placed in it seem invariably to die. In the same way, although culex egg masses appeared at intervals in those experimental pails containing borax which were left uncovered, the larvæ which hatched never reached the second instar. Inasmuch as time and evaporation leave borax unchanged, the larvicidal effect remained as great at the end as it had been at the beginning of the six weeks' experimental period described in the paper, water having been added as required to make good the loss by evaporation. The original cost is small and there seems no reason why renewal of the solution should be required for many months. The explanation of the larvicidal character of borax does not seem to lie in its reaction. The pH of the solution in the pails did indeed stand at 9 or over, but when boric acid was used the hydrogen-ion content was indicated as 7 or less and yet the fluid was fully larvicidal. The effect must accordingly be attributed to the boron. It is hoped during the coming season to test the solution on suitable natural pools.

THE WASHINGTON HOURS CONVENTION.

WHEN the House of Commons discussed the Washington Hours Convention during the past session, the debate proceeded mainly upon party lines and the results were negative. The Convention, the terms of which were scarcely mentioned, has for its main purpose the adoption of the eight-hours day or the 48-hours week in countries where that standard has not already been attained. The British Government has refused to ratify the Convention; its spokesmen have described the document as ambiguous and unworkable, the result of a series of compromises; they have declared that it requires revision and they have argued in favour of awaiting the date (in three years' time) when it must in any case be revised. They point out that ratification of the draft Convention involves an international obligation which can be enforced at The Hague International Court by all the sanctions provided by the Treaty of Peace; they add that ratification would imperil the existing agreements which have been reached in this country whereby hundreds of thousands of workers have the prospect of employment in conditions of industrial peace. In criticising the Government, Mr. Thomas Shaw could say with considerable conviction that Great Britain, in setting her signature to the Treaty of Peace, accepted certain principles for the betterment of the lives of the workers, but had made no attempt to carry out her agreements in that respect. We ought not, he said, to allow our labour legislation, particularly for women and young persons, to sink below the level of European countries which we have hitherto regarded as somewhat backward in industrial development. The ratification of the Convention will now presumably be suspended indefinitely unless a strong public demand for it should arise. Probably public opinion in Great Britain inclines to the view that our labour questions are intricate enough already without importing international problems, that our labour legislation compares favourably with that of other countries, and that our traditions of administering justice make the enforcement of moderate laws a better thing than the adoption of rigid and high-sounding principles which are imperfectly observed. Many people, too, are resentful of the apparent surrender of legislative independence involved if Parliament at Westminster is expected to give effect without modification to draft Conventions signed in foreign countries by persons of whom the average citizen here knows little. The controversy over the Lead Paint (Protection against Poisoning) Act of 1926 was not without significance. Nevertheless, those who uphold the importance of a British Parliament in relation to legislation as to British industrial conditions would be in a far stronger position if that Parliament would fulfil its promises, made so long ago, for the revision of the Factory and Workshop Act.

[1] Amer. Jour. of Hygiene, March, 1928, p. 293.

SPLENOMEGALY ASSOCIATED WITH ASPERGILLOSIS.

UNDER the name of splenomegalie primitive aspergillaire Drs. Emil-Weil, Chevalier, Grégoire, and Flandrin in the current issue of *Le Sang* draw attention to a form of splenomegaly associated with the presence of fungi in that organ. The condition does not appear to have been recognised in this country, though it has attracted some attention in France. The essential lesion is enlargement of the spleen, though in the later stages patients may show cirrhosis of the liver, ascites, and a severe degree of anæmia. The authors point out that attention is in many cases first directed to the condition by the occurrence of severe hæmatemesis; in such cases a diagnosis is usually made of splenic anæmia of the type first fully described by Osler. A moderate degree of jaundice may be present and urobilin may appear in the urine.

Differential diagnosis during life or before removal of the spleen is difficult from that rather inchoate mass of syndromes passing under the name of Banti's disease. When the spleen is available for examination the presence of mycelial threads and even of such organs as ascospores serve to define the condition. So far as can be judged from the descriptions given by the authors, the mycelia show up fairly readily with the ordinary histological stains; the splenic tissue shows presence of inflammatory cells including giant cells and of areas of hæmorrhage with a fibrous tissue reaction. Much iron-containing pigment is deposited in the neighbourhood of the hæmorrhagic areas. The authors succeeded in cultivating fungi from a series of spleens examined and satisfied themselves that their cultures represented fungi present in the cultured material and not contaminations. Cultures grew but poorly on ordinary bacteriological media at 37° C., but good growths were obtained on Sabouraud's medium at room temperature. The fungus obtained on culture was identified by M. Jacques Duché as belonging to the genus Eurotium and was named *E. amstelodami*. All

attempts to infect the spleens of laboratory animals with the fungus proved unsuccessful. The resemblance of the histological appearances of the spleen in this condition of splenic aspergillosis to that described by Gamna [1] under the name of siderotic splenogranulomatosis is so close as to make it highly probable that the conditions are the same. Mr. Gamna, doubtless by invitation, contributes to the same issue of *Le Sang* an account of his own findings. He admits the identity of the conditions described and the frequent, if not constant, association of the splenic changes with the presence of an aspergillum, but utters a warning against too hasty acceptance of the fungus as the causative factor. On the balance of evidence, however, it would appear that Dr. Emil-Weil and his collaborators are to be congratulated on having reduced by one the number of different conditions passing under the name of "Banti's disease."

PREVENTIVE MEDICINE IN SOVIET RUSSIA.

NEWSPAPER readers in this country do not get a very favourable impression of the capacity of the Soviet Government for State medicine, but according to the Moscow correspondent of the *Münchener Medizinische Wochenschrift* (March 9th, p. 455) the authorities are coping with overwhelming problems of public health in an earnest and practical way. This writer goes so far as to suggest that Russia is the only country in the world where the age-old doctrine of prevention is really practised wholeheartedly. It is, of course, common knowledge that under the Empire the intellectual, moral, and hygienic state of the poorer classes was extremely low; that venereal disease and epidemics raged almost unchecked, and that the infantile mortality was very high—25 per cent. according to some estimates. The Soviet Government naturally visualised the medical calling as a service to the State rather than as a means of private gain. In 1922 chairs of social hygiene were established in all the universities, and the subject was made obligatory for medical students. Chairs of experimental hygiene, and of industrial and educational medicine, have been endowed at many centres of medical education. Attached to the chair of social hygiene is a clinic for social and occupational diseases, and students attend factories and schools for instruction in their especial problems. The Government is very active in health propaganda work among the people, and at the beginning of 1926 nearly a hundred centres of instruction were in operation in the large cities of Russia and several more in the Ukraine and the other republics of the Union; these centres include a museum, a lecture-room, and a library. In addition, 300 of the chief workmen's and peasants' clubs have their own hygiene museums and exhibitions, and the smaller clubs, village halls, and schools share about 2500 travelling demonstrations. There are also 15 exhibition cars on the State railways. Antenatal clinics, baby centres, creches, forest schools, day and night sanatoriums, convalescent homes, and special clinics all disseminate information about health. Visiting nurses instruct their patients in hygiene, and chemists pack their goods in wrappers bearing slogans and health rules. Over and above these measures there is a multifarious literature of popular medicine, which includes journals, handbills, book-markers, pamphlets, coloured posters, and texts. Up to the date of this account the press of the Health Commissariat had printed no fewer than 600,000 posters in two years and a half, illustrating each subject by 40 examples, and this takes no account of the publications of local health offices. 50,000 lantern slides are issued every year; mock trials are held in public to illustrate legal points of State medicine; health films are shown continually in the picture theatres, and propaganda is broadcast by wireless. The people are described as coöperating enthusiastically, and in pursuance of the principle that health reform in industrial conditions must come from the workers themselves, most town councils have health committees which attend clinics and investigate the living and working conditions of the patients. Similar committees are constituted, it is stated, in nearly all large works and firms to supervise hygiene and welfare, and every residential area elects a health committee to look after the amenities of dwelling-houses, alignment, water-supply, ventilation, disinfection, and the like. In the country similar bodies, under the presidency of the district medical officer, see to the purity of wells and springs, and organise clinics for special services and the care of school-children. Compulsory observation and treatment of venereal and trachoma patients is enforced, and alcoholics and mentally disordered persons are subject to a legal discipline much stricter than is in force in most other countries. Desperate ills demand desperate remedies, and this intensive activity at any rate shows a determination to improve what has been a parlous state of affairs. Its progress will be of the greatest interest to medical men all over the world.

[1] Gamna: Hæmatologica, 1923, iv., and 1924, v.

MINERS' PHTHISIS.

REPORTS from the Miners' Phthisis Bureau of South Africa have hitherto been rather belated, and an effort to get up to date by combining two years in one issue [1] marks the first report by Dr. L. G. Irvine as chairman. Otherwise there is continuity of thought and of outlook with that of Dr. Watkins-Pitchford, his predecessor. During the period covered the Act of 1925 remodelled and clarified the definitions of "ante-primary," "primary," and "secondary," as applied to stages of silicosis, and introduced some changes in procedure. The work carried out by the Medical Bureau continued to increase in volume and expert skill; in particular the technical quality of radiograms keeps improving, and the Bureau rely more than ever on them for exhibiting the earliest detectable specific physical signs of silicosis. The most definite indication of good results following the stern fight which is being waged against miners' phthisis is to be found in the increasing average age of working miners; in 1917–18 the proportion of miners 30 years of age and over was 59·4 per cent. of the whole body of miners; in 1925–26 the percentage was 74·4. One consequence is the existence of a greater number of long service men with long periods of exposure to the silica-dust risk; hence the number of simple silicosis cases has been rising—a curious result of improved conditions. A miner slightly affected has the option of continuing at work, but by so doing he forfeits right to an award for any more serious condition which may develop; if he contracts tuberculosis he is bound to give up work, so as to protect others. The type of miners' phthisis is less severe and more "European" than in 1912, and it takes longer in developing; but the conditions of mining still remain capable of originating the disease in modified form. The old type with extensive fibroid consolidation, wherein the factor of inhaled dust was predominant over the infective factor, has given place to a type in which the infective factor is predominant and the dust factor less prominent. The two factors, however, are closely allied; the dust particle and the tubercle bacillus are each carried by the same type of cell; and the two factors may frequently be concerned together from the first in the production of lesions. Nevertheless a probability exists that, at a later stage, a new or further inhalation infection, aided by a humid, dust-laden atmosphere, carries the tubercle bacillus directly to the lesions. Apart, however, from new infection, silicosis tends to advance, the advance depending on the degree of activity of the infective element present; the direction of progress is towards an ultimate condition of obvious tuberculosis. Hence the regimen of life for a silicotic

[1] Report upon the Work of the Miners' Phthisis Medical Bureau for the Two Years ended July 31st, 1926. Pretoria. 1927. Union of South Africa.

should be that for a case of latent tuberculosis. The tendency to advance is hardly, if at all, influenced by withdrawal from further exposure to silica risk. Clearly both factors must be minimised, the dust hazard and tuberculous infection, in order to eliminate the disease. Much consideration is given to the factors leading to an observed increase in the production-rate of simple silicosis, 57 per cent. of which is accounted for solely by the altered average age of the personnel already mentioned; while a great part of the remainder is due to greater refinement in the detection of cases. The evidence on the whole is encouraging to those who are applying practical preventive measures. The average duration of mining life of those who become silicotic has increased from 109 months in 1920–21 to 130 months in 1925–26; but the incidence of silicosis still falls most heavily upon miners using machine drills. In 1917–18 among European miners 191 cases infected with tuberculosis were detected, compared with 37 in 1925–26. The native labourers are now recognised to be a potent source of infection, and steps have been taken to supervise their health more intimately. Apart from a strict initial examination on engagement any native losing 5 lb. or more in weight in three months, or 6 lb. or more in six months, is set aside for stethoscopic examination; further, any native employed for five years or more is medically examined every three months and is radiographed annually. The native is as liable as the European to silicosis, but seldom remains a miner long enough to develop the disease; he is far more liable to tuberculosis. Over 1000 cases of active tuberculosis, an incidence of 5·5 per 1000 native miners, were detected in 1925–26; in this way native "carriers" are being detected and eliminated. The results of these efforts to remove all sources of tuberculosis from among the mining community numbering nearly 200,000 males will be watched with interest.

THE EFFECT OF ANÆSTHETICS ON THE LIVER.

Dr. S. M. Rosenthal and Dr. W. Bourne [1] consider that the toxic effects of anæsthetics on a diseased liver play an important part in the causation of deaths during anæsthesia. To compare the action of various anæsthetics on hepatic function they have employed two tests. The first of these depends on the disturbance of pigment metabolism, the amount of urobilin in the blood and urine being an index of the damage sustained by the liver. The second is based on the power of the liver to remove bromsulphalein from the blood and excrete it in the bile; normally it is almost completely removed 15 minutes after injection, but if the organ is injured the dye remains in the blood for a longer time. The experiments were done on dogs, and, with chloroform, it was found that brief periods of anæsthesia caused immediate toxic effects followed by functional impairment for eight days, whilst after two hours' administration of chloroform recovery was not complete for six weeks. Disturbance of function could be shown by the bromsulphalein test long after the bilirubin in the blood and urine had returned to normal. Ether, on the other hand, had no effect on pigment metabolism and only a transient impairment was shown by the bromsulphalein test, recovery being usually complete in 24 hours. Nitrous oxide and ethylene, when given with oxygen, so that there was no cyanosis, caused no detectable changes with either test. When, however, these were given in such a way as to produce cyanosis, both immediate and delayed toxic effects could be demonstrated. It is suggested that cyanosis increases the vulnerability of the liver to anæsthetics. Large doses of morphine in dogs were found to act in the same way, and even without anæsthesia they caused considerable depression of function. Rosenthal and Bourne believe that in severe disease of the liver ethylene is the anæsthetic of choice.

[1] Jour. Amer. Med. Assoc., Feb. 4th.

Mr. Wilfred Trotter has been appointed Honorary Surgeon to the King, and Mr. Thomas Peel Dunhill has been appointed Surgeon to His Majesty's Household.

WE regret to announce the death of Mr. Richard Lane Joynt, surgeon to the Meath Hospital, which occurred at Dublin on April 8th, at the age of 61.

Dr. George Chisholm Williams, who died on April 10th at his home in Finchley, had been disabled for many years as a result of radiological work carried out since 1895. Last year he was granted a pension on the Civil List in recognition of "Self-sacrificing services in the application of Rontgen rays to the treatment of disease."

THE Medical Registration Council of the Irish Free State has notified the Minister of Local Government and Public Health that the new Register will be established on May 26th, 1928. After that date no person whose name is not entered on the Register will enjoy the privileges of a qualified medical practitioner in the Irish Free State. In the first instance the Register will consist of those whose names are entered in the General Register with an address in the area of the Irish Free State and of those whose names are entered in the General Register with an address not within the area of the Irish Free State who notify to the Registrar within one month before May 26th their wish to be registered in the Irish Free State Register. While, therefore, every practitioner on the General Register is entitled to be registered on the Irish Register, only those resident in the Irish Free State will be automatically registered; others must signify their wish to be so registered. After May 26th registration will only be effected on payment of a fee.

As a result of visits to Central and Eastern Europe and the United States, the Malaria Commission of the Health Organisation of the League of Nations reported that the number of specialists in malaria was too small for the organisation of an effective campaign against the disease. To remedy this, the Health Organisation has arranged, since 1926, a series of special study courses in malaria for the benefit of doctors who have specialised, or who desire to specialise, in malariology. The courses are divided into two sections: (1) a theoretical course given in suitable institutes and laboratories; (2) practical experience in infected areas where the campaign against malaria is actively carried out. In arranging the study courses, the Health Organisation has secured the collaboration of Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine; Prof. E. Brumpt, of the University of Paris; Prof. Bernhard Nocht, Director of the Institute of Tropical Diseases at Hamburg; and Prof. Vittorio Ascoli, Director of the School of Malaria in Rome. Instruction will be given in the language of the country where the course is being held. Courses in 1928, details of which are supplied by the Health Section of the League of Nations in Geneva, have been arranged in London, from April 25th to June 13th; in Hamburg from May 7th to June 13th; in Paris from June 1st to July 13th; and in Rome from July 2nd to July 30th.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society will be held at the Guildhall, Bath, on Friday, April 20th, at 2.30 P.M., when there will be a discussion on Causes of the Decline in Tuberculosis Mortality. The opening speakers will be Sir Robert Philip, Dr. W. M. Willoughby, Prof. E. L. Collis, and Prof. Major Greenwood. Before the meeting the Mayor of Bath will entertain members of the society at luncheon. Those who intend to be present are asked to notify Dr. J. F. Blackett, M.O.H., Health Offices, Sawclose, Bath, not later than April 16th.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXI.

HEADACHE IN CHILDREN.

HEADACHE is a symptom commoner in the adult than in the child. In infants and young children it is infrequent, but after the age of 5 years it becomes increasingly common as the child grows older. Among the reasons for this age-incidence may be mentioned the incomplete ossification and elasticity of the cranium in the early months, the freedom of the young from circulatory disturbances, and their relative immunity from the continued mental stress which produces the headaches of nervous exhaustion. Even apart from these factors, it appears that children are for some unexplained reason less liable to exhibit the symptom. In illustration of this fact may be mentioned the absence of headache in some cases of tuberculous meningitis occurring in children below the age of 6 years, and the unimportance of headache, as compared with vomiting, in young children afflicted with migraine.

Headache can only be recognised in infants by a correct interpretation of the signs which it produces. Cephalic pain, which may be taken to include both earache and headache, causes young infants to put their hands to their heads, scratching and rubbing them at times; it also causes wrinkling of the forehead, crying, and restlessness. Earache is by far the commonest cause of screaming and of putting the hands up to the head, and it is especially frequent in association with teething and the catarrhs of the first two years. Quite apart from earache, true headache may occur in infants, and is often a sign of an organic affection of the brain. Disorders of function, such as indigestion and constipation, do not produce headache at this age. Indeed, constipation in the infant is almost always unaccompanied by the toxic phenomena associated with it in adult life.

The younger the child the more important is the symptom, and the more apt is it to point to cerebral mischief. Headaches should never be treated symptomatically until every effort to reach an accurate diagnosis has been made.

Causation.—In infancy true headache (earache being excluded) may be caused by meningitis, intracranial tumour, and hydrocephalus. In the last condition it is only to be expected when the enlargement is slow and ossification of the cranium advanced. It is not always present in tuberculous meningitis. The persistent crying of syphilitic infants has been put down to headache resulting from meningo-encephalitis. The discovery of such signs as a tense and bulging fontanelle, head retraction, and optic neuritis will give a ready explanation of the symptom.

In children past the age of infancy there are several well-defined groups of conditions in which headache is prominent.

Ocular Headache.

Eye-strain is the commonest single cause of headaches which are prolonged over a period of more than a few days. It seldom occurs before the age of 5 years, the age when most children commence their schooling. Persistent headache without obvious cause at or after 5 years of age should always lead to an estimation of any refractive error which may be present. It originates in minor degrees of hypermetropia and astigmatism more often than in serious refractive errors. The headache of ametropia is seen in its most typical form after school hours, and in this respect contrasts with headaches of toxic origin which occur most commonly in the morning. Overwork at school may of itself be a cause of headache, quite apart from any refractive error.

Toxic Headache.

There are a large number of conditions which may be responsible for toxic headaches. All the acute infections may produce headache, but they are by no means so liable to do so as in adult life. Fever of less than 104° F. hardly ever causes headache, and its presence with a temperature of 100° to 101° should arouse suspicion of tuberculous meningitis. Scarlet fever, enteric, acute tonsillitis, and acute pyelitis, may all give rise to very severe headache, which is safely relieved by giving aspirin in doses of 5 grs. every four hours to a child of 5–10 years. It is but seldom that the headache of acute infections in the younger children is prolonged or severe enough to require any palliative treatment.

Two main varieties of toxic headache will be considered separately: The first of these is that due to digestive disturbances, the second that of juvenile rheumatism.

Digestive Disturbances.—A morning headache occurs in some children who have a prolonged disturbance of digestion. Such children are most commonly below the age of 7, an age when there is a remarkable improvement of digestive power, following the commencement of the second dentition. The children in this group are found to have furred tongues, foul breath, and impaired appetite; constipation and abdominal distension may also be present. For purposes of diagnosis and treatment, the group must be divided into two sub-groups.

First, the digestive disturbance may be dietetic; the food itself may be at fault either in variety or quantity, or the digestive powers of the child may be subnormal. Sometimes the child is being forced to eat even when loss of appetite should have warned the mother to be careful. A common fault is the giving of a heavy meal shortly before bed-time, a procedure only too likely to embarrass a digestion already impaired. Treatment should be directed towards finding a diet which may be easily dealt with, constipation should be corrected, no food (not even milk) should be allowed after tea, and the time of this last meal should be adjusted so that an interval of at least two hours elapses before going to bed. The use of stomachic mixtures such as—

℞ Pulv. rhei, gr. i.; sodii bicarb., grs. ii.; syr. zingib., ♏ vi.; aq. menth. pip. ad, ʒ i.; below 3 years give ʒ i., and above 3 years ʒ ii., before meals; and ℞ sod. bicarb., grs. iv.; spir. chlorof., ♏ ii.; inf. gent. co. ad, ʒ ii.; sig., ʒ ii. t.d.s., a.c.—

are useful but quite subsidiary to the general measures outlined above.

Secondly, digestive disturbance may be secondary to infections of the upper respiratory tract. Disturbances due to acute infections, such as coryza and tonsillitis, are comparatively short-lived, but may sometimes persist for a few weeks after the attack has subsided. More lasting is the digestive upset produced by the swallowed secretions of chronically infected tonsils and adenoids. Such children show the symptoms of indigestion (foul breath, furred tongue, loss of appetite), together with night cough, disturbed sleep, grinding of the teeth, puffy eyelids, and dark shadows round the eyes. An important and suggestive sign, which the physician may be lucky enough to see, is the presence of muco-purulent discharge running down the posterior wall of the pharynx. The tonsils in these cases are not necessarily enlarged, but scarring is often present, while the lymphatic nodes draining the tonsils are palpable. Enucleation of tonsils and removal of adenoids is the correct line of treatment in cases which continue to show such signs over a period of weeks.

Headache due to *juvenile rheumatism* occurs in children of the hospital class above the age of 6 years, and usually in the early part of the day. For the headache of chorea aspirin grs. v. to x., according to age, three times in the day, is useful. In cases of subacute rheumatism with headache, symptomatic treatment is seldom required if the general condition is dealt with.

Cyclical Vomiting and Migraine.

Migraine is not very common in childhood, but it is seen occasionally during the later half of this period. Sir William Gowers pointed out that the migraine of childhood differs from that of the adult in showing a tendency to be accompanied by pyrexia.

There is considerable evidence in support of the view that migraine is manifested in the child by the disorder known as cyclical vomiting. The attacks of cyclical vomiting are often accompanied by pyrexia, and sufferers from this disorder may become liable to typical apyrexial migraine after puberty. On the other hand, the periodicity characteristic of cyclical vomiting is not always found in migraine, neither do most of the cases of recurrent vomiting develop migraine.

A large majority of the recurrent bilious attacks accompanied by headache fall into the group of acetonæmic vomiting, and for these treatment by the daily addition of glucose to the diet will almost invariably be an entirely satisfactory prophylactic measure. For younger children a teaspoonful of commercial liquid glucose given by itself or as an addition to porridge or milk pudding should be taken three times in the day. It is most important that this daily treatment should be followed religiously for as long as the liability to the attacks persists. For older children the dose should be doubled. In place of commercial liquid glucose, barley sugar or powdered glucose may be used. Most mothers become rapidly convinced of the efficacy of this treatment, and there is seldom difficulty in getting them to continue it for prolonged periods.

Endocrine Disturbances.

Persistent headache is found in a certain small group of overgrown children with obesity. The usual clinical picture in these cases is that of a fat girl of about 12 years of age, who is considerably over weight, taller than usual, and subject to severe and persisting headache. Radiograms of the sella turcica are normal. The treatment of the headache is most difficult; phenazone, aspirin, and bromides may be tried, or the following mixture:—

℞ Phenazon., grs. v.; sod. brom., grs. v.; glycerin., ℥ xxx.; aq. camph. ad, ℥ s.s.; sig., ℥ s.s., t.d.s.

In suitable cases extr. thyroid siccum may be tried, but its effects must be carefully watched. Headache is also a feature of dystrophia adiposo-genitalis (Fröhlich's syndrome), and it is often complained of by girls at the age when menstruation commences.

There are other causes of headache in children which do not fall into any defined groups, but must be mentioned briefly. Headache occurs in some 50 per cent. of all cases requiring operation for adenoids; thus it will be seen that adenoids are commonly responsible for this symptom, but the influence of septic tonsils must not be overlooked. Dental caries may be a cause, especially when the headache is very erratic in its onset and disappearance. Uræmia, nephritis, anæmia, trauma, and lead-poisoning are occasional causes. It is also seen as an early symptom of juvenile general paralysis, and, like vomiting, it may be a symptom of hysteria. Sinusitis is a highly exceptional cause of headache in childhood, and only occurs at the extreme latter end of this period.

Headache Without Discoverable Cause.

Even when diligent search has been made for a cause all efforts may prove fruitless. Many cases admitted to a children's ward for headache alone are discharged undiagnosed and unrelieved, thus showing that even when all the causes of this symptom are investigated there remains a residuum of "idiopathic" cases. In this group a family history is sometimes obtainable. The ages when the liability to headache in the parent appeared and disappeared are data on which a guarded prognosis may be based.

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Special Articles.

SOLARIUM TREATMENT IN SOUTH AFRICA.

BY LEWIS E. HERTSLET, M.R.C.S. ENG.

THE following statement has been prepared with the feeling that overseas colleagues would be interested in the conditions under which sunlight treatment is being given with us. A publicity campaign, organised by the South African Government, has brought our assets of sunshine and spaciousness before the mind of the world, and visitors from Europe, America, and England are finding out in increasing numbers the general benefits of our climate, but from a medical standpoint, however, we are only just beginning to realise the possibilities underlying the scientific use of our all-the-year-round sunlight.

The Johannesburg Hospital.

Here there is a solarium in the children's section, which has been in working for the past two years. This was made possible by the gifts of the local Rotary Club and one of the surgeons to the hospital. It consists of an open-air ward of 12 cots, which opens on to a flat roof with a brick parapet and a brick-tile floor. The cases treated here are practically only tuberculosis of spine or hip in children between the ages of 4 and 14. Most of them come from the Witwatersrand, but a few have been sent from other parts of South Africa. They are given sun in the mornings only, for graduated periods from 30 minutes to three hours; the average stay of the present patients is 15 months. In Johannesburg, also, the flat roof of the recently built theatre block of the *General Hospital* is to be utilised for giving sun baths to certain cases in the wards, but this is not considered a solarium. A movement is now afoot to provide an open-air ward and sunlight treatment in the grounds of the *Convalescent Home* attached to the hospital—this will be for adult (surgical) tuberculous cases only

General Extension of Sunlight Treatment.

An increasing number of practitioners in town and country are prescribing sun baths for those of their patients who can arrange them in their gardens, while some are given at nursing homes, and other cases are sent to private solariums and two or three health institutes in various parts of the country.

At the *Nelspoort Sanatorium* for pulmonary tuberculosis on the Karroo sun treatment has been tried, but apparently not with marked success. It would appear that the altitude is not high enough, and the climate too hot for this method to be entirely satisfactory. The raw native of South Africa believes in the sun to a great extent for certain conditions, and is often to be found, when sick, lying inside the cattle-kraal, but he wisely eschews the heat of the mid-day sun. That the actinic rays benefit him, notwithstanding his brown-black skin, is without a doubt. This would seem to contradict the theory that the pigmentation produced by exposure is a protective against the ultra-violet rays. It appears true for white patients that "the better they brown the better they do"; may it not be that the melanin particles protect against the infra-red rays, which constitute 80 per cent. of the whole spectrum of light? An interesting observation is that patients pigment here more quickly under the winter sun than in summer time.

I cannot state how many artificial sunlight lamps are in actual use for medical purposes in this country, but an agent of Messrs. Siemens (which firm is one of the largest importers of these lamps) has given me the following figures: hospitals, 4; doctors, 13; dentists, 2. The number is naturally small, owing to the small number of our white population, and the

generosity of Nature in giving us so much of the real article.

Very little has so far been done in the direction of analysing the quality of our ultra-violet light: we know that in this climate, with our clear atmosphere, and particularly in the higher altitudes, there must be a very high percentage of the actinic (or as I prefer to call them) "saluferic" rays, both from direct sunlight, sky-shine, and reflected from the clouds, but we cannot state in exact terms what their value is. Some research work in actinometry is now being undertaken, however, by a graduate of the local university.

Some Personal Experience.

Personal experience of over two and a half years has clearly shown me that heliotherapy is applicable to a great many more conditions than the so-called "surgical tuberculosis," and is a much more complicated matter than merely "baking in the mid-day sun." It has also demonstrated to me that most, if not all, of the many factors enumerated below may be reckoned as integral elements of solarium treatment if it is to be given scientifically and successfully.

The *climate* must be entirely suitable, a daily and seasonal variability is good, but there should be no undue heat, cold, moisture, or dryness: such conditions in fact as are available on this part of the high veldt where the winter is cold but dry and sun-shiny.

An *altitude* of over 4000 feet means clearer and cleaner air, with a higher actinic value in the light. The Witwatersrand is 5700 feet above sea-level, which is practically the same altitude as that of Dr. Rollier's clinics in Switzerland.

A plentiful supply of *sunlight* is an obvious necessity. The mean daily hours of sunshine for the following places are:—

Cape Town ..	7·5	While the percentage of the total possible hours are respectively	66
Witwatersrand	8·7		73
London ..	3·8		29
New York ..	6·9		56

The maximum hours of sunshine occur here in the winter months. In this district we get over 3000 hours of sunshine per year; there are only about 14 days in the year in which the sun is hidden all day, while for 134 days there is continuous sunlight from dawn till dusk. In Switzerland a year with 2000 hours of sunshine is, I believe, labelled "a sun year."

The clearness of the *atmosphere* largely affects the permeation of the saluferic rays. Smoke, dust, fog, and mist all act as strong filters of these vital rays. A solarium must be stationed where these untoward factors are reduced to a minimum. The high veldt air is of a wine-like and stimulating character for most of the year.

Surroundings.—Where resident patients are under treatment the grounds should be sufficiently spacious and so enclosed as to ensure quiet, comfort, pleasure, ample air- and sun-entry, together with due privacy.

Supervision.—The highest measure of success can only be attained where the treatment is constantly supervised by a resident practitioner who is *au fait* with the reactions, dosage, and danger-signs, who is competent to make clinical examinations, undertake the necessary observations, prescribe and carry out other forms of treatment, and keep correct records of progress.

The employment of trained *assistants* is a sine qua non as patients often cannot be safely left to take their own insolation ("heliation" is perhaps a happier word!), especially in the early stages of treatment, and many of them need that care and attention which can only be given by a trained nurse. This obviously applies specially to children. Both doctor and nurses should, if at all possible, adopt the practice of taking sun baths themselves.

Here it is comparatively easy for us to plan an *open-air life* for those undergoing treatment. Rooms for eating and sitting with the north aspect enclosed by mosquito (fly) netting only, sleeping porches, cottage tents (with double fly), hammocks, stretchers under trees, these and other arrangements make it possible that at no time during the course is the patient in a closed room. The conditions to be fulfilled by such a *building* are: It must be specially designed; it should face (in this country) north-east, and so allow for the admission of all the available sunshine; it must be cool in summer and warm in winter; cheerful appearance of the interior; pleasant surroundings, and ample air-space are also essential matters.

Sun Enclosures.—Here we have coined the word "helion" to indicate those places where the actual sun baths are given. Special attention needs to be given to these, so that adequate privacy and sufficient air circulation may be provided; radiated heat from floor and walls is undesirable; there must be protection from cold winds, and shade and air baths on warm days should be obtainable. Grass underfoot and walls of thick hedge are possible in this country, and add to the pleasure of prolonged sessions in these helions. Stretchers on which patients lie in the earlier stages; screens for head protection, and space in which more advanced cases can walk about are all essential. Other provision is, of course, necessary for bed-ridden cases.

Dosage.—The quantity of actinic rays reaching the patient is affected by the following physical conditions: altitude, season of the year, angle of the sun (time of day), clearness of the atmosphere, presence of clouds, movement, temperature, and humidity of the air. Some of these vary from minute to minute. To these eight variables must be added the following personal factors which again vary in each individual: colour of skin, pigmenting power, facility of perspiration, blood pressure, age, previous exposure, rise of temperature, &c.

It will be realised that the permutations and combinations of these many factors are practically endless, so that the dose per day of sunlight for any particular patient cannot be rigidly laid down, and a careful study of the physical conditions and personal idiosyncrasies is essential to proper dosage. This is regulated by increasing or diminishing the amount of skin area exposed and the time of such exposure. We find that most patients cannot stand and do not benefit by a full exposure of more than an hour to the great volume of light present at this altitude, even when this is only reached by a careful graduation over a period of 10 or 12 days. Mid-day exposure is practically never possible nor desirable. An over-dose can very easily happen in this climate, but can be avoided by rigid adherence to instructions and systematic taking of temperatures and blood pressures, together with careful watching of skin and other reactions.

A specially planned *time-table* for each individual is highly desirable, especially in the early stages. It helps in the promotion of discipline and gives the patient some plan by which he may take his exercise, rest, bath, meals, heliation, walks, and so on.

In this country *diet* is a matter of some difficulty, but not insuperably so. Variety, palatability, vitamin and caloric content, punctuality and attractive nature of service, heat and digestibility, are all matters that should receive due attention in connexion with food.

Accessibility.—The solarium needs to be within easy reach by road and rail, so that friends and relatives can visit patients, and no strict hours should be laid down in this connexion. Reasonable nearness to a large town is highly desirable from the point of view of obtaining the often necessary help of specialists (X ray, bacteriology, and consultants).

Medicine and Massage.—These need to be prescribed according to the condition and needs of each patient, and in consultation with colleagues sending them for treatment.

Amenities.—Directed occupation, motor drives, wireless, gramophones, motoring, fishing, boating, games, bioscopes, papers, telephone, and other amenities should be available and permitted to all suitable cases.

Record of Cases Treated.

We have here a delightful absence of rickets, while cases of surgical tuberculosis are seldom seen. At our altitude tuberculosis of lungs responds quickly and well to this form of therapy, particularly in the afebrile type. Definite improvement has resulted in paralysis agitans, rheumatoid arthritis, bronchiectasis, and neurasthenia. Cases of secondary anæmia, general debility, insomnia, sciatica, and chronic gastritis have been cured. One case of hypopiesia in a man of 59 was brought to the normal in five weeks. Cases of tuberculous peritonitis, rheumatism, and post-operative convalescence have shown marked progress even with a short course of treatment.

Many other conditions would doubtless respond equally well to the extraordinarily good sunlight facilities available in South Africa as a development of systematic treatment occurs.

Florida, Witwatersrand, Transvaal.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

A Medical Adviser to the Edinburgh Corporation.

THE Edinburgh Corporation have decided that a new appointment of medical adviser to the corporation be created to include the duties of casualty surgeon, medical referee, and medical adviser for all departments of the corporation with certain exceptions, and that the salary for the appointment be fixed at £500 per annum. This is a new and important departure. Formerly the work of casualty surgeon was associated with the professorship of forensic medicine in the University—at least since the date when Sir Henry Littlejohn became professor. Before that time Sir Henry had charge of forensic medicine in an extramural school. The appointment of Dr. Douglas Kerr to the new office is, in a way, a reversion to the former practice; he is now an extramural lecturer. Sir Henry Littlejohn was at once medical officer of health for the city and lecturer in the extramural school. During his tenure of the professorship the casualty surgeonship was associated with the chair. The new office, however, includes the duties of medical referee, and the examination of entrants to the permanent service and claimants for superannuation. It was pointed out from the opposition that the professor of forensic medicine would be deprived of a good deal of teaching material, but Dr. Kerr's appointment was carried by 28 votes to 25. It is, however, possible that some readjustment may be made with the University to secure to University students any advantage there may be in the materials furnished from the corporation's police department. In the recent appointment to the professorship of public health, the medical officer of health was made director of sanitary instruction, and contributes to the work of the public health course. It would be a pity if a chair with such a distinguished record as the chair of forensic medicine in Edinburgh were, in any degree, to suffer for the want of teaching materials. The whole tendency of modern developments has been rather to bring the city into closer touch with the Edinburgh medical schools.

Dr. Kerr, the new medical adviser, was assistant to the late Prof. Harvey Littlejohn for over five years and lecturer in the University. He has "carried on" since Prof. Littlejohn's death both in the work of the chair and in the casualty surgeonship.

Discharged Prisoners.

The Edinburgh Prisoners' Aid Society is appealing for greater financial support from the public. The total expenditure in helping 1341 people last year was £331, of which £179 was received from the prison authorities and £151 came out of the society's funds. These are very small sums for refloating in society 1341 ex-prisoners. It is stated that the help given to discharged prisoners represented in money only 5*s.* per individual, and of this sum a little over 2*s.* per person came from the funds of the society. One wonders whether a sum of 5*s.* is worth anything real in enabling a destitute person to re-establish contact with the industrial world. No doubt the society has many methods of enabling him to establish touch; but as the knowledge of the criminal widens and prisons are reorganised, there is a growing feeling that the criminal's punishment begins, not when he enters the prison, but when he leaves it. It was stated at a recent meeting that the number of prisoners had fallen off enormously and that to-day there were under 200 women in all the prisons in Scotland. The old type of woman prisoner who kept repeatedly coming to prison for being drunk was dying out; but the Borstal class of case was on the increase. The suggested factors of this increase were unemployment and "the pictures." Here, as usual, the most obvious causes are readily accepted as the most real; but it is worth remembering that the juvenile delinquent is not a creature of yesterday or of any single country, with or without "pictures." These short cuts to explanation are not impressive. It is not for want of scientific study that we fail to grasp in practice how deep and elusive the roots of crime are, but I wonder when the trained psychologist is to get his real chance in the police-courts. He is already in the schools and doing good work; it is time he was on the bench and in the prisons.

Royal Victoria Hospital Tuberculosis Trust.

The report of this trust—the pioneer in the Scottish antituberculosis campaign—records a remarkable increase in the number of applications for the admission of young children to the colony at Southfield. The scientific position long maintained by their medical advisers—namely, that tuberculosis is for the most part implanted in childhood—has now become a matter of general acceptance. "It is to the nursery and schoolroom," the report states, "that observation and effort should be directed if measures for the eradication of tuberculosis are to be fundamentally sound and practically effective." The principle of anticipatory detuberculisation is followed at Southfield, the child's physiological resistance raised, and therapeutic measures taken to meet particular issues. The results have proved most gratifying. The committee has reason to believe that not only can evident disease be arrested, but that the process of detuberculisation may be advanced so far that approximate immunity for the future may be expected.

THE EDINBURGH CORPORATION BILL.

WE have already drawn attention to the Bill in which the Edinburgh Corporation seeks powers to control persons suffering from venereal diseases. This Bill is likely to come up for a second reading in the House of Commons on April 19th.

In the following statement received from a Scottish correspondent will be found some of the arguments put forward in its favour, together with an account of local opinion on the subject:—

"The Bill," writes our correspondent, "is the result of a careful study of the situation in Edinburgh by the Medical Officer of Health and the Public Health Committee of the Corporation, who, after mature consideration are satisfied that the voluntary system cannot control or eradicate venereal disease in a reasonable period. They have given it an exhaustive trial, they are satisfied that it is ineffective for the purpose of controlling the disease and preventing infection, and they are of opinion that it must be reinforced. In this view they are supported by the large majority of the local authorities in Scotland and by the staff of medical men and women who are administering the clinics in Edinburgh. The proposals of the Bill have been discussed by the Edinburgh

Division of the British Medical Association which by a large majority expressed itself in favour of all the provisions of the Bill and was unanimously in favour of further legislation to deal with defaulters. The Bill has been made wide enough to cover all persons affected with venereal disease and liable to infect others, so that the powers of the local authority may be extended to defaulters from private practitioners and persons affected who do not seek treatment at all. This avoids penalising those who take the proper course of reporting for treatment, and is in line with the recommendations on this subject of the Trevethin Committee report of 1923. The intention of the Edinburgh authorities is to continue the voluntary system and to reinforce it by measures providing a 'compulsitor,' especially in the case of defaulters. They have safeguarded the voluntary principle in every possible way.

"On March 15th a deputation representing the Corporation of Edinburgh met the Secretary of State for Scotland and the Minister of Health for England. They placed before these Ministers the facts regarding the situation in Edinburgh and strongly urged them to allow the Bill to go for second reading or at any rate to leave it to the free vote of Parliament. The Minister of Health intimated plainly to the deputation that, for considerations of general public policy, they would be compelled to advise the House of Commons not to give a second reading to the Bill and to put the whips on in the vote to oppose the measure. It is unusual in parliamentary procedure for the Government to intervene at this stage of a private Bill. Considering that the Government did not act similarly in the case of private Bills on the same subject put forward by Bradford and by Liverpool, the Edinburgh Corporation feel strongly that they have not been fairly treated. The Corporation met on March 20th and decided unanimously not to withdraw the Bill and to proceed to the second reading. I understand that one of the objections taken to the Bill raises the technical point that as the Bill interferes with the liberty of the subject it should be in the form of a public Bill. It may be pointed out, however, that there is practically no public health measure on the Statute Book which does not interfere with the liberty of the subject, and many of these measures were primarily the result of local legislation, being strenuously opposed in the first place. Edinburgh, for example, had compulsory notification of infectious diseases by a local Act in 1879, and this was followed by the General Notification Act of 1889 which involves restriction of liberty, although many of the infections concerned are less dangerous to the community than venereal disease. One of the main objections to the Bill is that it might drive the disease underground. This, as is pointed out in the report of the Royal Commission, is really a psychological question. It is a striking fact that those who have had actual experience of the working of the present scheme, and are most concerned in maintaining its efficiency, do not entertain any apprehension on this point. In addition, the attendances at the clinics in Edinburgh during the past three months have been maintained and even increased in spite of the publicity which the Bill has received. The other chief objection is that it would be difficult to lay down a standard of cure and that the standard set by the Edinburgh authority might be too high. It is a noteworthy commentary on this objection that it is in those clinics which demand and have insisted on the highest standard of cure that the best attendance rates have been obtained and the number of defaulters are least.

"The Bill is a measure of medical legislation to be administered by the medical profession and designed to prevent the spread of disease. It would undoubtedly be of the greatest benefit to women and children, often innocent sufferers, and under the present system it is impossible to protect them. It would educate the public in regard to venereal disease, but would not give to the outside public any more information regarding sufferers than at present. The local authority and their legal and medical advisers have very carefully considered all objections to their proposals. They are well aware that there are difficulties to be met, but these difficulties in their view are not nearly so serious or so insurmountable as those which are inherent in the present situation. They are asking, as suggested by the Trevethin Committee, to be allowed to try the method they are proposing for an experimental period. They are confident that they can successfully administer the provisions of the Bill and, in any event, they are satisfied that any of the possible disadvantages following on the granting of the powers asked for are trifling compared with the proved disadvantages of the present system.

"The Convention of (Royal) Burghs has recently reasserted its general support of the Bill, and at a meeting to be held on April 12th at the Usher Hall four out of the five M.P.'s for Edinburgh will speak n its favour."

BUCHAREST.

(FROM OUR OWN CORRESPONDENT.)

Narcotic Drugs.

THE Ministry of Health has appointed a Commission to elaborate a Bill designed to circumvent the trade in narcotic poisons. The first paragraph of the Bill details the drugs which are to be regarded as narcotic poisons; they are morphia, cocaine, codeine and its derivatives, hashish and its preparations, ether, and all natural or synthetic products which have actions similar to those of the above. Persons who import, or attempt to import, such drugs illicitly, or prepare, or try to prepare, them without the necessary licence are liable to a fine of 10,000 to 20,000 lei and one to two years' imprisonment. Persons who keep in their houses, or on themselves, any amount of such drugs, however small, without a lawful motive, or obtain possession of them by means of fictitious medical prescriptions, or try to do so; also persons who, being aware that the prescription is fictitious, yet deliver stupefying drugs to the individual producing it, are liable to six to twelve months' imprisonment and a similar fine. Those who use the said drugs in company, or recommend their use to others, or facilitate their use by another person, either for money or free of charge, or in any other way, are liable to three to six months' imprisonment and a fine of 10,000 to 100,000 lei. Medical men who facilitate the procuring of these drugs, or prescriptions, are liable to two to twelve months' imprisonment and a fine of 10,000 to 50,000 lei. If the offence is repeated they may be prohibited from carrying on medical or pharmaceutical practice for six months or a year. The Bill will shortly be submitted to the Chamber of Deputies for sanction, and it may be hoped that it will soon become law. It should be stated that its drafting was not necessitated by local conditions, but was the outcome of the international agreement signed at Geneva on Feb. 15th, by which all the States agreed to take measures against the abuse of narcotic drugs.

Congress of Thalassotherapy in Rumania.

At the last Congress of the Association Internationale de Thalassotherapie, held at Arcachon in France in 1925, it was decided that the next meeting should be held in Rumania this year. The countries represented in this association are the Argentine, Belgium, Brazil, Canada, Czechoslovakia, Chile, Cuba, Denmark, Egypt, France, Great Britain, Greece, Italy, Japan, Jugoslavia, Luxembourg, Mexico, Monaco, Norway, Peru, Poland, Portugal, Rumania, Spain, Switzerland, Sweden, United States of America, Uruguay, and Venezuela. It is a pity that none of the States lately forming the Central Powers is a member of the association. The organising work at the Rumanian meeting[1] will be

[1] The Rumanian authorities have placed at the disposal of the Privy Council a limited number of invitations to, and programmes of, the Congress, and these will be sent to any duly accredited delegate on application to the Council.—ED. L.

done by General Vicol, President of the Rumanian Balneological Society and the head of the Balneological Section of the Ministry of Health. The chief subject of discussion will be Pott's disease, and among the lecturers will be Dr. Sorel and Dr. A. Delotte (France), Dr. Delchef (Belgium), and Dr. Balacescu and Dr. Manicatide (Rumania). The programme—subject to such slight alterations as may be necessary—will be as follows :—

On May 22nd the Minister of Health will receive the members of the Congress at Herkulesbad, where there are famous thermal sulphur baths. From May 23rd–25th there will be receptions at Bucharest, with inauguration of the Congress by the Minister of Health, a reception at the Town Hall, inspection of medical institutions, and excursions to Sinaia, Brasov, Moreni (the site of the chief Rumanian oil wells), and Slânic Prahova. On the two following days the Congress will meet at Constanza, on the coast of the Black Sea, and will inspect bathing resorts in the vicinity. May 28th and 29th will be devoted to excursions on the Black Sea, and afterwards there will be an opportunity of visiting Constantinople, or the bathing resorts of Govora and Calimanesti, and the monastery of Curtea de Arges. Would-be members of the Congress have to pay an entrance fee of 1000 lei (£1 5*s*.) ; for wives and other ladies of the party the fee is 500 lei. The fee entitles members to reduced prices for board at Bucharest and Constanza, and elsewhere no charge will be made.

Criteria of Recovery from Gonorrhœa.

Lecturing on this subject at a meeting of the Oradea Medical Society, Dr. Adolf Erdös said that the treatment of gonorrhœa ceases when there are no longer any clinical signs of the disease. It is wrong, however, to say that this stage has been reached unless there has been a thorough examination of the prostate, seminal vesicles, vas deferens, testicles, and perineum. It is desirable to make a urethroscopic examination and dilate the urethral canal ; if no discharge is seen in the orifice, and the urine is quite clear, it may be said that there are no clinical manifestations of the disease. Observation, however, should continue for at least a fortnight, and during this period Dr. Erdös advises patient to take easy walks and other light bodily exercise ; he must refrain from alcohol, sexual intercourse, excitement, and staying up late at night. During this fortnight the urethral orifice should be free from any discharge, and the urine, which should be passed into three glasses, should not contain filaments or prostatic crystals (last portion). The presence of some very tiny filaments may be disregarded. During the observation period he recommends that the urethra should be dilated ad maximum, gentle massage being applied above the sound ; after this there should still be no discharge or filaments in the urine. On the sixth or seventh day following the cessation of treatment a powerful dose of gonococcal vaccine is injected as a provocative. If the cure is complete no discharge will be seen as a result. Of these procedures urethroscopy should be left to the last, and dispensed with if possible, as it may do harm by causing trauma.

From the practical point of view, said Dr. Erdös, patients may be regarded as cured if all the above procedures indicate a recovery. If, however, they require certificates to the effect that they are completely cured of gonorrhœa, they should be asked to present themselves again after the lapse of eight to ten weeks, when the secretion of the prostate and seminal vesicles is examined after massage, and the urethra is looked at as far as the sphincter vesicæ. The sediment of the urine is tested, and if the results of these examinations are not regarded as sufficiently conclusive a provocative dose of vaccine may be given. All these tests must give a 100 per cent. negative result, and if they do so the required certificate may be issued without hesitation, and consent given to marriage.

SOUTH AFRICA.

(FROM OUR OWN CORRESPONDENTS.)

The Medical Congress.

THE public opening of the first scientific meeting of the Medical Association of South Africa (B.M.A.) took place at Bloemfontein on March 12th, and it attracted a distinguished gathering. Dr. A. J. Orenstein, the President of the Federal Council of the South African Medical Association, presided, and he was accompanied by Dr. C. Hugh Bidwell (President of the conference), Dr. S. M. de Kock (Vice-President of the conference), Mr. Justice Jacob de Villiers, and Dr. H. P. Brackenbury, who represented the British Medical Association. Dr. Orenstein, after welcoming the visitors from overseas, said that the long struggle to get a Union Medical Act was now happily practically closed. The Senate, they felt sure, would appreciate fully the importance of the measure, and put no obstacles in the way. The Minister of Public Health, Dr. Malan, and the Secretary for Health, Dr. J. A. Mitchell, deserved special congratulation for securing the passage of the Act through the House of Assembly.

Mr. Justice de Villiers formally opened the proceedings. He spoke of two dangers—one was commercialism in medicine, the other was that of ignoring the possibility of advances in medical science being made outside of the ranks of the medical profession, to the great detriment of science as well as of mankind. He appealed to members of the congress to endeavour to spread among the people those broad principles of hygiene that are well established, and about which there is no controversy, and to concentrate on the prevention of disease. Dr. C. Hugh Bidwell then gave an address on Eugenics.

Dr. H. B. Brackenbury stated that he had been sent to South Africa to emphasise the unity of the profession everywhere, and their willingness to seize upon everything contributed by others outside the profession to promote the health not only of the patient immediately before them, but of the community at large. The absence of disease was not sufficient. Their ideal was the promotion of health both physical and mental. A reception, given by Dr. and Mrs. Bidwell, was largely attended, as was also a civic reception in the town hall. A trade exhibition was given in the Reitz Hall, Grey University College, where the leading manufacturers of medical and surgical apparatus, drugs, and fine chemicals were represented.

The Mosquito Problem.

An investigation of the mosquito problem has been conducted by the South African Institute for Medical Research, and the results are published in the reports of the Institute under the title of A Mosquito Survey of Certain Parts of South Africa, with special reference to the carriers of malaria and their control. The investigation has been carried out by Dr. Ingram and Mr. de Neillon, entomologist.

The report notes the various types of mosquitoes found in Zululand and the Transvaal. It describes several new species, and gives much useful information about the life-history of the prevailing species here. The two main carriers of malaria seem to be *Anopheles costalis* and *Anopheles funestus*, which are both widely distributed and both very resistant to climatic and other changes.

An account of the climatic conditions of the malarial areas is given and Dr. Ingram states that granted an accurate return of the spleen rate for the malarious districts of the Union, and a record of the rainfall during the pre-epidemic period, it ought to be possible to forecast the occurrence of malaria in epidemic form in South Africa as is done for the Punjab in India. There appears to be considerable resemblance between the meteorological conditions of both countries, although South Africa is not so dependent on a monsoon for its rainfall.

The report shows how widespread are the carriers of the disease and how relatively easy it would be to

organise an anti-malaria campaign. Up to the present the Government has done little to eradicate the disease, which is rampant in the Transvaal, Natal, and South-West Africa, and even in certain districts of the Cape, but it is hoped that this report may stimulate the Minister of Public Health to consider the organisation of such a campaign.

Plague.

Inspection by the rodent officers of the Department of Public Health shows that during the last few months of 1927 serious spread of plague infection in veldt rodents took place southwards from the Calvinia district into the Ceres basin, as far as a point about 10 miles north of Ceres, and also westward from Bushmanland into Namaqualand, as far as a line about 15 miles west of Springbok and running roughly parallel with the coast. The affected area early this year included Springbok, Garies, and Nieuwerust, and extended to within a few miles of Van Rhynsdorp and about 25 miles northward of the protective belt, which has been cleared of rodents, along the Oliphants River and irrigation canals. The wave of extension was difficult to check, and the indications are that hares, which are numerous in this part of the country, are playing an important part in the spread. The extension of infection into the Ceres Basin is specially important, as it involves an area in which large quantities of grain, forage, and fodder are produced, much of which is sent by rail to Cape Town and other centres. This infected area is only separated from the open gerbille-infested country on the Cape Peninsula side by a mountain barrier, about three miles wide, traversed by the Ceres and Elandskloof passes, with the Drakenstein range traversed by the Tulbagh Pass further west. Measures are being taken to clear these passes of rodents, and thus strengthen the defences in this area.

UNIVERSITY OF LONDON.—The Senate has approved the institution of a Chair of Dietetics as a part-time post at St. Thomas's Hospital Medical School, subject to reconsideration in the event of funds being available. It has been resolved to institute a Readership in Morbid Anatomy and Histology tenable at the Middlesex Hospital Medical School, and a Readership in Bacteriology tenable at University College Hospital Medical School.—Prof. J. T. Wilson has been appointed External Examiner in Embryology and Mr. J. H. Carpenter External Examiner in Entomology for the year 1928.—A Ph.D. Degree in Physiology has been conferred on Hector Alfred Colwell (King's College Hospital) for a thesis entitled Radium, X Rays, and the Living Cell, together with six subsidiary contributions.

Forthcoming Lectures.—A course of three lectures on the Pharmacological Evidence for Current Methods of Treatment will be given by Dr. J. H. Burn, Director of the Pharmacological Laboratories, Pharmaceutical Society of Great Britain, at University College on May 1st, 2nd, and 3rd, at 5 P.M. At the first lecture the chair will be taken by Dr. H. H. Dale, F.R.S. A course of three lectures on Animal Psychology for Biologists will be given (in English) by Dr. J. A. Bierens de Haan, lecturer in experimental zoology in the University of Amsterdam, at King's College on May 4th, 9th, and 11th, at 5.30 P.M. At the first lecture the chair will be taken by Prof. Julian Huxley. A course of three lectures on Anatomy and the Problem of Behavior will be given by Dr. G. E. Coghill, member of the Wistar Institute of Anatomy and Biology, Philadelphia, at University College on May 7th, 8th, and 10th, at 5 P.M. At the first lecture the chair will be taken by Prof. J. T. Wilson, F.R.S. A course of four lectures on the Human Kidney and the Physiological Study of Human Urine will be given by Prof. J. B. Leathes, F.R.S., professor of physiology in the University of Sheffield, at Guy's Hospital Medical School on May 15th, 16th, 22nd, and 23rd, at 5 P.M. At the first lecture the chair will be taken by Prof. M. S. Pembrey, F.R.S. A course of three lectures on Graves's Disease will be given by Dr. John Eason, of the Royal Infirmary, Edinburgh, at the Middlesex Hospital Medical School on May 29th, 30th, and 31st, at 5.30 P.M. At the first lecture the chair will be taken by Dr. R. A. Young. All these lectures except those by Dr. Bierens de Haan will be illustrated by lantern slides. Admission is free. A course of six public lectures on Blood, a Study in General Physiology, will be given at University College on May 15th, 17th, 18th, 22nd, 24th, and 25th, at 5 P.M., by Prof. L. J. Henderson, of Harvard University.

Public Health Services.

A CASE OF ALLEGED OVER-PRESCRIBING BY A PANEL PRACTITIONER.

THE East Sussex Insurance Committee considered last week a report from its Medical Service Subcommittee dealing with the procedure adopted by the Ministry of Health in the case of a practitioner on the Committee's list whose prescribing exceeded the average cost for the area. The practitioner, the report states, was told by the regional medical officer that the cost of the drugs and appliances which he had ordered was exceptionally high, and that the R.M.O. would call upon him for the purpose of discussing the various points, and ascertaining the reasons for the prescribing in question. The report goes on:

The impression of the interview left upon the practitioner's mind was that the R.M.O. had already made up his mind, and did not wish to listen to explanations. There is nothing in the regulations themselves (as distinct from circulars issued by the Ministry) which suggests that officials of the Ministry will have private interviews with practitioners before deciding whether there is a prima facie case or not, and the idea of such domiciliary investigations by the department responsible for the "prosecution" appears somewhat repugnant to ordinary ideas of British justice. However, the Subcommittee realises that in some cases it may result in a saving of time and trouble if the R.M.O. has an interview with a doctor whose prescribing appears to be costly. In order to prevent misunderstandings, however, it would appear to be essential, that the interview should be limited to investigation, that the R.M.O. should ask for explanations only, and should not express opinions of his own, and that, if the explanations which he receives do not satisfy him, the matter should be referred at once to the Panel Committee, without any kind of preliminary warning or rebuke from the Ministry.

Subsequently, the practitioner received from the Ministry a letter which he regarded (and the Subcommittee considers rightly regarded) as a distinct rebuke, coupled with a threat of further disciplinary action to follow. The letter stated that the Minister found it "difficult to avoid the conclusion" that the practitioner had not given due attention to the importance of exercising reasonable economy. The reports adds that letters in similar terms had been addressed by the Ministry to other practitioners in the area whose prescribing showed an excess above the average. The Subcommittee expresses no opinion as to whether the practitioner had, or had not, prescribed medicines and appliances in excess of what was reasonably necessary for the adequate treatment of his patients, but records its opinion:

That, on the facts as stated in this report, while there may have been a prima facie case, which the Ministry might well have referred to the Panel Committee, the practitioner had strong grounds which justified him in thinking that his explanations would have been satisfactory to his professional brethren on that Committee; and that no steps should have been taken to induce him to alter his methods of prescribing, and thereby deprive his patients of their rights and possibly to inflict loss and suffering on them, unless and until the Panel Committee had dealt with the case.

The report concludes: "If it is the right of a practitioner, as it clearly is, to have the issue tried by a committee of his fellow practitioners, it is still more the right of the insured person, who cannot take any action in the matter himself, to receive all such medicines as the practitioner responsible for treatment considers necessary, unless and until the practitioner's methods have been reviewed, and have been found to be unnecessarily costly, by the Panel Committee, and it is from this point of view that the Subcommittee regards the action of the Ministry of Health as tending unduly to curtail the benefits to which insured persons are entitled under the Act, and in some cases to throw an undue burden on the funds of societies."

TYNE PORT SANITARY AUTHORITY.

Dr. W. E. Harker, in his annual report for 1927 to the port authority, writes that foreign infectious

disease is treated in the Tyne Port Floating Hospital, but there were no cases for it to treat. No infectious disease was found among alien passengers, who are mostly examined in the medical room on Newcastle Quay. On board ship 3331 rats were destroyed, 426 by sulphur fumigation in 37 ships, and 2905 by traps in 79; 1684 were black, 1647 brown rats, an unusual equality; all were found free from plague. The water from 30 ships from ports infected with or suspected of cholera was emptied and the tanks cleaned. The chief diseases reported on the preceding voyage or on arrival were: accidents, 200 (10 deaths); feverish colds, 105; influenza, 64 (1 death); enteric, 28 (1 death); heart disease, 16 (9 deaths); consumption, 12 (2 deaths); pneumonia, 4 (1 death). Apparently none of the wheat, sugar, eggs, fruit, or fish imported required condemnation. Two of the 10,499 fishing boats were found foul and were cleansed and deodorised. In 9730 inspections of ships, nuisances were found in 20 per cent. of British, and in 13 per cent. of foreign. There were 326 side ports to refit, 88 defective water-closets, 89 leaking decks, 50 defective stoves. Dirt and vermin were found in about the same proportion. All requirements of inspectors were carried out. The 18 water boats of the port were examined and their tanks found in good condition. Facilities for treatment of venereal disease exist, but no detail is given of their activities.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Bootle.

WE have received from Dr. F. T. H. Wood the first health report of a county borough for 1927.

The population of Bootle at the mid-year 1927 was estimated at 84,970. The birth-rate was 21·4. The death-rate from all causes was 12·2; from tuberculosis, 1·47; from cancer, 1·33; from respiratory diseases, including influenza, 1·5; and from heart disease, 0·9. Some of the death-rates, calculated per 1000 births, were: neonatal, 25·3; infant mortality, 78; diarrhœa and enteritis, 17·6; and maternal from childbirth, 5·5.

Dr. Wood points out that the tuberculosis and school medical services in the northern half of the borough have been conducted too long in unsuitable buildings, and that the proposal of the Education Committee to dispose of the technical school premises, in which some of this work has been done, creates an opportunity for the erection of a special building to house tuberculosis work, maternity and child welfare work and the "minor ailments," and other clinics of the Education Committee. These activities concern a minimum of 600 cases per week. The bacterial examination of 30 samples of milk showed that seven reached the standard of Certified milk, and four the standard of Grade A milk, but that on the other hand nine were grossly contaminated and two contained tubercle bacilli. The public analyst's report shows that of 105 samples of milk, eight were deficient in fat. Fines to the extent of £16 2*s.* were inflicted on six of the vendors. One sample of sausages contained borates.

Bootle, in common with other areas in S.-W. Lancashire, is at present affected by an unusually severe type of scarlet fever. There were 160 notifications, with five deaths. Of the nine fatal cases of diphtheria (including two admitted from Litherland), five died within 24 hours of reaching the hospital, after being ill previously for periods varying from three to nine days. Tracheotomy was performed in six cases, with three recoveries. The death-rate from diarrhœa and enteritis was 17·6, as compared with 6·3 in England and Wales. During the decade 1891 to 1900 the death-rate from tuberculosis was 2·17 in Bootle and 2·01 in England and Wales. Since that period the Bootle rate has only declined to 1·5 during 1926–27, while the English rate has fallen to under 1·0. Dr. Wood points out that this excess in tuberculosis incidence over the country generally is an unfavourable circumstance which also occurs in neighbouring Merseyside areas. The work of the antenatal clinics shows gratifying progress, and during 1927 one expectant mother in every four attended.

There was a small outbreak of puerperal fever in the maternity home. Four cases were classed as puerperal fever and three as puerperal pyrexia between April 11th and 25th. The cases were seen by the consultant obstetrician. Two died and the others made a complete recovery. No explanation could be given for the occurrence, but there was an outbreak of severe septic sore-throat among the nursing staff on April 29th after the puerperal fever outbreak. The neonatal mortality was the lowest ever recorded, the average for the last four quinquennia having been 39·4, 35·3, 33·7, and 34·7. The Merseyside boroughs combine for the purpose of public health propagandism and in June they made a new departure by the appointment of a whole-time medical lecturer-organiser, and it is hoped to put in hand an extensive programme by arousing the interest of educational, religious, political, and commercial bodies. It is mentioned that the Ministry of Health declines to pay the customary 50 per cent. grant for this public educational work in connexion with tuberculosis and maternity and child welfare.

As regards housing, the years 1927 and 1928 are likely to mark substantial progress. The municipal houses built during the last five years numbered 0, 2, 98, 74, and 182. In addition, 252 houses are due for completion in September, 1928, and 123 are provided for in the next financial year. At the end of 1927 the houses in the borough numbered 14,083. Good progress is being made with the scheme for the substitution of portable ash-bins for ash-pits. At the end of the year there were 7000 houses with ash-pits, and the programme for 1928 provides for the conversion of 1500. The work is being done under a provisional order, and the corporation supplies the ash-bin free.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MARCH 31ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 322 (last week 342); scarlet fever, 1706; diphtheria, 1277; enteric fever, 55; pneumonia, 1885; puerperal fever, 48; puerperal pyrexia, 114; cerebro-spinal fever, 10; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 25; continued fever, 2; dysentery, 61; ophthalmia neonatorum, 115. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 21 counties:—London, 1; Bedford, 1; Chester, 1; Derby, 18; Durham, 82; Essex, 4; Gloucester, 7; Kent, 1; Lancaster, 45; Lincoln, parts of Kesteven, 1; parts of Lindsey, 6; Middlesex, 4; Northumberland, 12; Nottingham, 11; Stafford, 2; Warwick, 8; Yorks, North Riding, 3; West Riding, 70; Brecknock, 1; Glamorgan, 18; Monmouth, 26.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on April 3rd-4th was as follows:—Small-pox, 4; scarlet fever, 1589; diphtheria, 2407; enteric fever, 32; measles, 1576; whooping-cough, 134; puerperal fever, 16 (plus 15 babies); encephalitis lethargica, 70; "other diseases," 34. At St. Margaret's Hospital there were 12 cases of marasmus, and 11 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 164 (88) from measles, 9 (2) from scarlet fever, 55 (13) from whooping-cough, 33 (7) from diphtheria, 47 (11) from diarrhœa and enteritis under two years, and 135 (18) from influenza. The figures in parentheses are those for London itself.

Of the 76 fatal cases of measles outside London 10 were reported from Sheffield, 7 from West Ham, 6 from Worcester, 4 each from Plymouth and Salford, and 3 each from Croydon, Brentford and Chiswick, Willesden, Walthamstow, Bristol and Bolton, while the figures in Edinburgh, Glasgow, and Dublin for the same week were 6, 13, and 6.

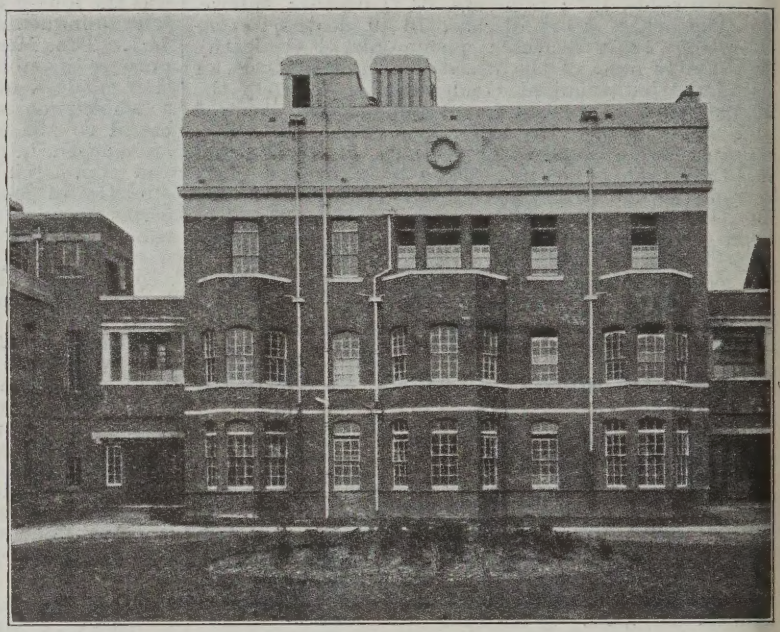
The number of stillbirths registered during the week was 309 in the great towns, including 59 in London.

TRANSFORMING THE "POOR-LAW INSTITUTION."

HALLAM HOSPITAL, WEST BROMWICH.

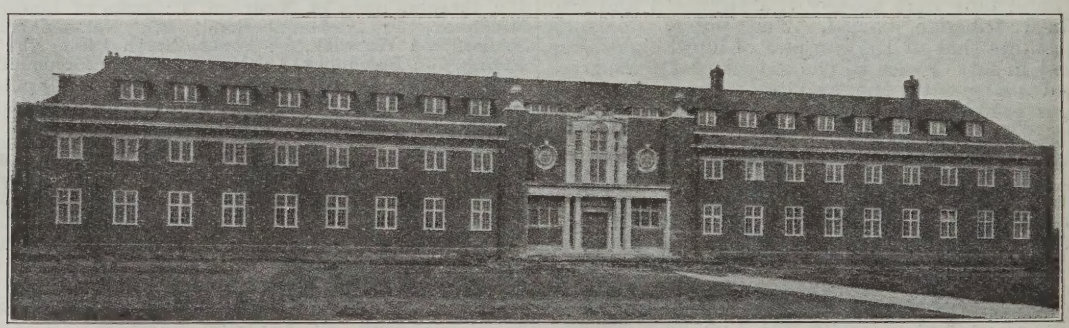
West Bromwich is one of the string of growing industrial towns—Walsall, Wednesbury, Dudley—which stretch to the north-west from Birmingham to Wolverhampton. Of no one of them can it be said that it is "nigra sed formosa," but they are nearly always busy and prosperous and their municipal consciousness is acute. Nowhere is it more acute than at West Bromwich, which has just set so admirable an example to administrators of the poor-law that, were it to be quickly and widely followed, not only would Mr. Chamberlain's scheme for converting the boards of guardians into poor-law committees of the councils become much more difficult to carry out, but a momentous change would come over the hospital situation by levelling up the poor-law institutions to the status of the best voluntary hospitals and easing the ever-increasing pressure upon those institutions.

Three years ago the West Bromwich board of guardians found itself in possession of a very unattractive workhouse infirmary "all of the olden time," a relic of the days before the modern hospital had been evolved. The cheerless wards had walls of unplastered brick which, although painted, looked cold. The floors were so badly worn by years of scrubbing as to be dangerous, and the wards were warmed by large central stoves with flues going up through the ceiling. There was no electric light, no operating theatre, no laboratory, no X ray department, and a temporary nurses' home of corrugated iron. Operations were done in a dark side-room, inconvenient in every way and destitute of proper instruments, cupboards, and fixtures. In 1925 the guardians determined that the deformed should be transformed without loss of time. The whole of the wards were re-floored with polished oak, central heating and electric light were installed, and hospital beds and fixtures of the latest designs were put in. On the male side balconies with completely open fronts were erected, and on the female side a roof ward was constructed. Within a few months of beginning the work patients were being received in rapidly increasing numbers into the renovated wards, and by degrees the whole of the building was improved out of recognition, and furnished with complete modern equipment and appliances at a cost of a little over £100 per bed. A new nurses' home with 70 beds has been built and is shown in the accompanying illustration. The infirmary was then re-named "The Hallam Hospital," and, by the consent of the Ministry of Health, became a self-contained institution. The practical result was soon apparent. The 120 operations of 1926 became 924 in 1927, and the number of admissions grew in the same period by 669; there are now three resident medical officers and there are 52 probationer nurses whose teaching and training have been entirely reorganised.



Part of the renovated hospital.

A fortnight ago, when Sir William Willcox opened the administrative block, the X ray department, and the nurses' home, he was well justified in saying that the West Bromwich guardians "had done something which would occupy the attention of the country, the Government, and the nation as a whole." He reminded his hearers—what, we fancy, is not yet generally understood—that when a poor-law infirmary is converted into a municipal hospital the dreaded stigma of pauperism is removed. He commended the fine example set by West Bromwich, and expressed his belief that it would be followed by a similar advance in hospital improvement and reorganisation throughout the country.



The new nurses' home.

Parliamentary Intelligence.

HOUSE OF COMMONS.

THE EASTER ADJOURNMENT.

THE House of Commons adjourned for the Easter recess on Thursday, April 5th, until Tuesday, the 17th.

TUESDAY, APRIL 3RD.

NATIONAL HEALTH INSURANCE BILL.

Mr. NEVILLE CHAMBERLAIN, Minister of Health, in moving the second reading of the National Health Insurance Bill, said that 16 years ago Mr. Lloyd George embarked upon a new and extraordinarily interesting enterprise for the purpose of providing medical benefits and advice for all classes of the population who might be in need of them. The scheme was one of national insurance based upon a sort of triple partnership. The contributions from the workers were supplemented by other contributions from the employers and from the State, with the result that it was found possible to offer benefits quite out of proportion to the sums that were contributed by the beneficiaries. On the whole, after a review of the operation of the scheme during the past 16 years it might be said with confidence that the principles upon which it was founded had proved to be sound. There had, of course, been many changes in the details. The changes arose partly from the lessons of experience, but in large measure they were due to the special circumstances induced by the War and by post-war conditions, and even now they could not expect to have reached finality. The national health insurance scheme was a tremendous undertaking. Under it there were to-day some 16 million people insured in this country, each of them paying a weekly contribution which individually only amounted to a few pence, but when added together the contributions formed a tremendous aggregate of about £25,000,000 a year. The societies and branches of approved societies which received these sums numbered about 7000, and they distributed benefits in small sums, mostly not exceeding £1, up to the total of about £30,000,000 a year. The present Bill was a further attempt at simplification of machinery, although it also contained some improvements of substance. It was founded principally upon a recommendation of a Royal Commission appointed in 1924 and which after a year and a half of laborious work and examining 200 witnesses, reported in 1926. The present Bill had been approved by the Consultative Council and the approved societies generally and would be grievously disappointed if the measure did not pass. The most interesting clause, and that which would be most generally approved, was the first, which dealt with the case of the man who was unemployed because he was genuinely unable to find work for which he was capable. The first question was what penalty or loss, if any, should be exacted from him on account of arrears? The second question was how long and under what conditions should such a man be continued in insurance after he had ceased to be employed and therefore to make statutory contributions? It seemed on the face of it undesirable that for a circumstance that was agreed was not the fault of the man he should be deprived of his cash benefits, and accordingly the Royal Commission recommended that some further provision should be made which would protect from all loss and all penalty a man who had fallen into arrears with his health insurance contributions on account of his certified unemployment. The Prolongation of Insurance Act, 1921, which was still in operation, had been viewed with increasing dissatisfaction by those who were administering health insurance. The time had come when that Act should be put an end to and some better scheme substituted for it. In the third schedule of the present Bill they were repealing the 1921 Act and substituting for it a completely new scheme which was to be found in the first clause of the Bill. Under that clause they were providing that all the penalties for arrears of contributions incurred because a man was genuinely unable to find employment should be abolished. That meant a loss to the approved societies estimated at about £680,000, and it would be too much to expect that the societies should find the whole of that amount. They had a source from which help could be given in the stamp sales account. They estimated that a sum of £500,000 a year would be available—a sum which would be subject to reduction as the figures of unemployment went down—to compensate the approved societies for the sums which they would lose. In this clause they had the largest concession to the insured workers and the biggest simplification of machinery that had been introduced into the national health insurance scheme since its inception. They were extending the period during which a person after ceasing to be employed could have free insurance with full benefits from one year to one year and nine months on the average. If at the end of that time he was still unemployed and could show that during the whole period he had been available for work but had been unable to obtain it, he would be given another year during which he would be maintained in insurance and entitled to all benefits subject to the condition that his cash benefits might be reduced to an amount which was not to be less than half the standard amount. It was also provided in the clause that where a man had been previously insured for ten years and on reaching 60 years of age fell out of employment he would be kept in insurance year after year provided that in each year he could show that he was available for but unable to obtain work.

Additional Benefits.

The question of additional benefits, and particularly dental and ophthalmic benefits, was a very important matter. Its importance lay particularly in this respect that these treatments were largely preventive as well as curative in character and that the large sums of money amounting to about £4,000,000 a year now being spent by the approved societies on dental and ophthalmic benefits might be expected in due course to bring their reward to those societies through the improvement of the general health which they were calculated to produce. It was a striking fact that while the administration of medical benefit was carefully safeguarded in the original Act, and while conditions were laid down in the body of that Act for that administration and the Minister was given power to make regulations still further to elaborate those provisions, nothing of the kind was to be found in the original Act in regard to additional treatment benefits. Now, however, that they had reached their present pitch of development it was very necessary that some similar care should be taken in regard to dental, ophthalmic, and other additional treatment benefits to see that the money was properly expended and to the best advantage of the insured people. In Clause 14 (3) the Minister was given power to make regulations governing the administration of any additional treatment benefit and the general arrangement of services under which the treatment was to be provided. The Consultative Council, recognising how necessary it was that the approved societies should be able to command an adequate dental service at a reasonable price, recommended the establishment of a joint committee to deal with the matter, and accordingly a committee representative of the dental profession and of the approved societies and known as the Dental Benefit Joint Committee, had been set up to regulate the conditions between the societies and the profession and to ensure the proper working of the service. On the whole he thought the joint committee was to be congratulated on having worked with a considerable amount of success, but there had been this difficulty, that it was not a statutory body and had to work by persuasion. One of the things that he desired to do was to make regulations which would enable him to give authority to this joint committee to ensure that any decision that it came to should be made binding and effective on all the approved societies coming under the scheme.

Dr. VERNON DAVIES: And on the dentists?

Mr. CHAMBERLAIN said that was so. They hoped to get a similar committee set up to deal with ophthalmic additional benefit. There seemed to be a great amount of confusion in connexion with the subject of dental clinics. Judging from his own correspondence he was convinced that many members of the medical profession had altogether exaggerated what was in contemplation. There was no intention of doing anything more at present than embarking on an experiment or two in order that they might thoroughly explore the advantages or disadvantages of the system of dental clinics. The argument in favour of the clinic was that where they got a dense population and could rely upon a steady flow of patients they could get in a clinic a standard of equipment and of specialisation among the staff which it would be unreasonable to expect from a single practising private dentist. He supposed that the argument against the clinic was that it was going to drive out the private practitioner and set up a monopoly. The matter had been discussed by the Dental Benefit Joint Committee, and they did not come to any conclusion except this, that they thought it very desirable that an experiment should be made. If this Bill passed it was his intention to make regulations for the setting up of experimental clinics, one or two perhaps in London. In no circumstances could he contemplate abolishing the free choice of dentists. No one must be compelled to go to a clinic if he would rather go to a private practitioner, and it certainly would be a condition of the acceptance even of an experimental clinic that there should be adequate representation of the profession upon its management.

Dr. DAVIES: Are we to understand that the consent of the local dental profession will first of all be obtained before the clinic is established?

Mr. CHAMBERLAIN said that he did not think that he could give any assurance to that extent, certainly not at that stage.

But he did not anticipate that they would have any difficulty in selecting the most suitable place for an experiment of this kind where they would not arouse any violent feeling of hostility on the part of private practitioners in the neighbourhood.

Deposit Contributors.

Under a new scheme which was to be found in Clause 10 people who on account of bad health could not get into an approved society were going to be formed into a new section of deposit contributors which would be called the Insurance Section and they were to be entitled not only to the equivalent of their own contributions plus the State contributions, but to all normal statutory benefits given under the original Act. Special precautions had to be taken to ensure the solvency of the scheme, because admittedly all these would be bad lives, and therefore they had to supplement the contributions of the deposit contributors themselves. On a valuation it turned out that there was a deficiency, and they had taken power to come on to the central fund in order to make good that deficiency. With regard to the motion for the rejection of the Bill which stood on the paper in the name of Mr. Rhys Davies, the Government could not see any way by which they could bring into the national health insurance scheme those persons who did not stand to any other person in the relation of employed to employer, but the definition in the original Act of the meaning of "employment" did exclude certain classes of workers who were really employed, but who were cut out under the technical objection that they were not under a contract of service. Those were people they hoped to bring in and they included timber fellers, hay cutters, stone breakers, building subcontractors, piece-masters or sub-contractors in various trades, hedgers, ditchers, thatchers, drainers, market porters, slaughtermen, and share fishermen.

An Administrative Measure.

Mr. RHYS DAVIES moved:—

"That this House, whilst prepared to welcome improvements in National Health Insurance, cannot assent to the second reading of a Bill which fails to recognise, in the light of modern conditions, the necessity for making the scheme more national in character by establishing the right of entry to many persons now excluded, neglects to make better benefits possible by restoring the State contributions of which the National Health Insurance Fund has been deprived, and fails in many respects to carry out the recommendations of the Royal Commission."

He said that it was a travesty to state that this Bill was brought forward as a result of the recommendations of the Royal Commission. Out of 122 separate recommendations of the Commission the Bill only contained 32. In fact the Bill was purely an administrative measure and the big questions affecting the health of the 16 million insured people of this country were left entirely untouched. He would like the Minister to explain what was meant by Clause 3, dealing with medical charities, particularly in South Wales. He understood that some of those medical charities were doing excellent work, and he hoped he might be pardoned for a little suspicion that the medical profession were influencing the Minister of Health unduly in that respect.

Lieut.-Colonel FREMANTLE: Never.

Mr. DAVIES said that before they could consent to the abolition of those medical charities he thought they must secure evidence as to whether there was any abuse of the privileges granted them under the original Acts. The two most important recommendations of the Royal Commission related to the pooling of surpluses and to the abolition of insurance committees, and this Bill touched neither. The Minister seemed to have avoided Clause 11. The Royal Commission was very emphatic that something more should be done in connexion with maternity benefit and the case of married women in general under the national health insurance scheme. Clause 11 did make the position of married women very much clearer, but it did not touch those issues raised by the Royal Commission—the terrible tragedy of maternal mortality in this country, about 3000 women dying annually in childbirth in this country. This Bill did not touch that problem in the least. He wanted the Minister to safeguard the interests of the insured persons by making it compulsory on the approved society to include words to the effect that if the insured person failed to go to a clinic he could still choose his own dentist or optician. He had no criticism to offer on the clause relating to penalties except one. He hoped that the Minister in dealing with penalties by regulation would see that whatever penalties he inflicted on the administrators of approved societies and insured persons he would inflict similar penalties on the medical profession, dentists, and opticians who might transgress the law. Some members of the medical profession were issuing medical certificates definitely with a view of increasing their panel practice and as far as he knew there was no provision to deal with cases of that kind in this Bill. If it was proposed to give to insurance committees ultimately the administration of some benefits which were to-day administered by approved societies the Minister of Health would find himself in a difficulty with the Consultative Council. If there had been any abuse at all in connexion with the administration of the National Health Insurance Act he was convinced that it occurred under Section 26. What had been done had been done probably strictly within the wording of the section; but it had not been done very honourably. He supported the full repeal of that section. If any approved society wanted to do anything by way of clinical work or granting money towards charities or hospitals it ought to do it clean and above board. The Royal Commission recommended that the scope of maternity benefits should be extended to cover medical and midwifery services in addition to cash benefits. It would be interesting to learn why that provision had not been included in the Bill. The Commission further recommended the extension of the scope of medical benefit in respect of dependents of insured persons in receipt of sickness or disablement benefit to improve provisions at the time of pregnancy and childbirth, the provision of dental benefit as a normal benefit, and above all that the insured population should be entitled to specialist services as well as ordinary medical practitioner services. Were it not for the fact that the State grant had been reduced the majority of societies would have been able to pay for specialist services.

Sir KINGSLEY WOOD said that the fact there had been no provision made in the Bill for specialist services had nothing to do with the Economy Act.

Mr. DAVIES said that the Bill was a very small contribution to the problem of national health insurance. It did not assist in the solution of the health problems of the country. What about cancer and rheumatism? Nothing was done in the Bill to deal with those diseases. When they compared the Bill with the recommendations of the majority of the Royal Commission he thought that the Opposition were justified up to the hilt in moving this amendment and carrying it to a division.

Mr. WHITELEY seconded the amendment.

Points Concerning Doctors and Dentists.

Lieut.-Colonel FREMANTLE said that there were certain points which naturally concerned very closely the medical and dental professions, and he wished to voice one or two of the feelings on those points. The medical profession generally would bless the Bill in certain parts strongly and in the other parts they would find it good in less degree. On the whole there was no definite provision in the Bill to which serious objection could be taken by those who were concerned in the working of this wonderful and beneficial scheme of insurance. He wished to call attention to the fact that the dental profession were naturally very much concerned, but they would be partly reassured by the statement which the Minister had made that afternoon. He (Colonel Fremantle) could speak perhaps with greater conviction for the dentists inasmuch as it was a friendly profession for which he had no direct responsibility, but he had this from the body representing the dental profession. There were three points which they hoped to see definitely established. The first was that the insured person should have the same freedom of choice of his dentist as he enjoyed with regard to his medical adviser. He thought that the House had had a very definite categorical statement that would be satisfactory to the dental profession. The second point was that the acceptance of any agreement as to fees and conditions of service arrived at after free negotiation by representatives of approved societies on the one hand and of the dentists on the other, should be subject to the approval of the Minister. The difficulty was that they met with collective bargaining everywhere. Unless the results of collective bargaining were made to hold with all parties concerned, especially with those who were less inclined or less able to carry out a bargain, the main object of collective bargaining fell to the ground. He hoped that there would be an assurance given on that point. The third point was that there should be no lay interference with the professional discretion of the dentist in the treatment of his patient. All those concerned with the administration of these Acts knew what was implied in that proposal. Always the criticism by the professional men of the approved societies was that instead of simply confining themselves to administration the approved societies interfered with the actual professional treatment, which only a professional man was really able to control and to criticise.

Sir KINGSLEY WOOD asked Colonel Fremantle to explain a little more what he meant.

Lieut.-Colonel FREMANTLE said that he meant that the difficulty of any lay control of professional persons was that in these matters they did interfere with the actual professional side. It was for that reason that they had their supervising officers. The doctors were naturally very sensitive. He thought that was really the only reason why sometimes there was friction between the professional men and the approved societies. It was for that reason that one

uld not accept the suggestion made by the mover of the nendment that the Insurance Commissioners should be ne away with and their duties given to the approved cieties. That raised the old original criticism that was velled against the Insurance Bill. It was obvious that proved societies could not properly administer these edical matters. The insurance committees were formed order that they might get a better idea that the benefits be administered. It was quite true, also, that the Royal mmission suggested that the duties of the insurance mmittees should be distributed to the appropriate local thority. Obviously it must be a matter of some concern them all that that proposal of the Royal Commission had t yet been acceded to. That proposal was not, as Mr. Rhys avies had said, to refer these duties to the approved cieties. It was to break up these duties and distribute them the appropriate local authorities. He supposed that the ason was quite clear. The whole question of local govern- nt was now the subject of discussion by a Royal Commis- n, and they must wait for the result of that before they uld see how the local authorities were going to be so ranged that they could properly have those duties placed on them. He hoped that they might be able to look ward before very long to having the result of the Royal mmission brought before the public and that House, d that it would then be put into action and not simply geon-holed. When they got the whole subject of local vernment cleared up and put on a systematic basis they ped to have this question of the future of insurance mmittees decided. He was quite sure that the functions the insurance committees ought to be blended with those the health authorities generally. One of the main criti- ms of the insurance system was that, whereas it was largely roduced by Mr. Lloyd George as a measure for the preven- n of sickness, it had failed in the prevention of sickness to very large extent. He did not say entirely, but to a very ge extent, the amount of sickness among insured persons mained very much the same, although he believed that the id of treatment applied had curtailed each case of sickness a considerable extent. The system certainly gave relief, t for prevention it was of very little advantage. One of e objects put forward in connexion with the original Act s definitely to link up the question of prevention and the estion of sickness by making a special provision by which, nen any particular area was found to be suffering from a ry excessive amount of sickness in any one respect, ps could be taken at once to turn the whole services of the surance Act on to that particular area. That had been nd to be impracticable. Why? Because the measure was roduced originally independent of the existing health ganisations. This was a danger that they constantly d in that House. They seized upon a new idea, they roduced a new Bill with a new scheme of organisation, d a new set of committees, or even of actual authorities, d a new set of officials all the way through. They thus ded to their burdens while diminishing certain others. ey had to use the actual machinery they had, and to prove it. He thought that local authorities might be used the central authority for administering medical benefit der this Act.

Maternity Service.

There was one special form of benefit which he was sorry s not provided for as an additional benefit. That was endance in cases of maternity. The answer of the Parlia- ntary Secretary no doubt would be that maternity benefit s provided by a money payment to the mother, who was ponsible for providing the midwife or having maternity vices. The objections to it were fairly obvious. In too ny cases the money was required so urgently for other rposes that it was not sufficiently used for the midwifery vices that were so necessary. He was glad that a com- ttee was to be set up to inquire into the training and supply midwives. When that committee reported he had not the st doubt that it would show that for a long time the mber of midwives in the more scattered parts of the ntry had been diminishing and the immense difficulty getting women to go into that important service. They l to record at the present time the loss of 3000 to 4000 thers as the result of childbirth, and they must therefore e some action which would increase the midwifery services the country. They would not be able to get a better vice in this respect unless they could make the profession ractive to the type of educated girl who would want to fil these duties properly. It really came down to a uniary benefit, and he would like to see some provision roduced into the Bill which would enable a fund to be set de for the general purpose of improving the remuneration midwives. He hoped that the preventive aspect of urance might be always kept uppermost and that, as y worked this system during the course of years, they ght see in what way they could use this sum of £25,000,000 £30,000,000 a year, not merely for the relief of trouble, for the prevention of preventable sickness and disease.

Family Medical Benefits.

Mr. HAYDAY, in supporting the amendment, urged that the Bill should make provision for family medical benefits. This question had become a very important one for many reasons. He did not know whether, if all the surpluses accruing to the approved societies were pooled they would provide a sum sufficient to give medical benefit to the dependents of insured persons. He wished to call attention to a question of administration. Approved societies sent a large number of those people on sickness benefit to the regional medical officers for examination. That was done in the interests of the benefit fund of the approved society, but the payment of the expenses incurred came from the administrative fund of the society. Such payments should be allowed to come from the benefit fund itself, because if they were to flow continually from the administrative account the administration was likely to be affected, and they would not get that efficient supervision which was desirable. He suggested also that there should be one all-inclusive scheme, amalgamating all the present social services under a separate department. That would avoid constant piecemeal legislation.

Major GLYN, speaking as chairman of the Federation of Rural Friendly Societies, said he believed, with the exception of minor points, which he hoped could be disposed of in Committee, the Bill deserved the support of everyone. If they could encourage more prople to take an interest in the friendly society movement it would go forward still further and foster the work done by them. Then, indeed, they would have greater health in the rural districts of the country and greater happiness in the homes of the people.

Grants to Charitable Institutions.

Mr. MELLER, in supporting the Bill, said that reference had been made to the effect of the amendment of Section 26 of the original Act and one hon. Member had said that there had been abuse of that section which enabled the approved societies to make grants to charitable institutions to meet special cases of emergency—cases where their members might require some special treatment from the hospital and which they could not obtain unless some contribution was made to the funds of the hospital. That was a right and proper provision, but some societies had used it as a means of anticipating the additional benefits which ought only to be declared at the end of the quinquennium as a result of the valuation. The Minister did not seek to take away from the approved societies the opportunity of making contributions, but he said, quite rightly, that if they realised that it was desirable to provide contributions to charitable institutions for the benefit of their members they ought to declare it in their list of additional benefits. Those societies which were not in the fortunate position of having a surplus could make application to the Minister and permission would be given in satisfactory cases. In regard to clinics he hoped the Minister would be prepared to accept an amendment making it quite clear that free choice, whether of dental or optician, was the inherent right of every insured person. In the North of Ireland medical benefit was not given and the result was very unsatisfactory. It was suggested by some societies that they ought to have the right to exclude members in Northern Ireland from participation in general valuation until Northern Ireland brought in a system of medical benefit. The view they put forward was that the clause was unfair to their members in the English and Scottish societies which had members in Northern Ireland. He hoped that the Minister of Health would consider that question. The overwhelming opinion expressed by the people concerned was against the abolition of insurance committees. It had been said that insurance committees had lost much of their virtue and had become mere recording machines; but it was a fact that in those districts where the insurance committees had lived up to their responsibilities and carried out their duties as required by the Statute they had become very helpful and very desirable bodies.

Miners' Medical Aid Societies.

Mr. MORGAN JONES said there were in South Wales institutions known as miners' medical aid societies. There was a considerable measure of apprehension among them as to what precisely the Minister of Health sought to do through the medium of Clause 3 of the Bill. These societies had existed for a very long time and after some difficulty were recognised 17 years ago at the passing of the original Act. He believed they had something round 40,000 members and, if they included dependents, the number would exceed 100,000 for whom medical services of various kinds were being provided through the medium of these organisations. But they had had to face opposition from the British Medical Association and also they claimed from the insurance committees. These bodies operated very largely on coöperative lines. The objection, he believed, generally came from the British Medical Association—and there had been pretty severe and sustained fights on the issue—that these societies

had a larger measure of lay control even than was found under the system of insurance committees. It was felt that Clause 3 gave the Minister power to terminate the existence of these societies. He did not want to develop an attack on the doctors generally in this matter, but he was entitled in defence of his constituents to submit a case in support of these societies. They drew a contrast between the treatment meted out to these medical aid societies and that meted out to private panel practitioners and the contrast was one which induced them to believe that the scales were heavily weighted against these medical aid societies largely because they were subject to the ban of the British Medical Association.

Specialist Benefit.

Dr. DRUMMOND SHIELS said that Members on his side of the House were all agreed that the Bill, so far as it went, was desirable, but it did not go to anything like the extent that was called for in any amendment of the National Insurance Act. As a response to the recommendations of the Royal Commission the Bill was seriously inadequate. The Minister of Health and his department were not primarily to blame for that. They found here, as in connexion with so many other matters, the hand of the Treasury, which prevented so much being done that the House felt ought to be done. Economy in these days was necessary, and the Treasury must exercise restraint in many directions, but the health of the people was one direction in which any so-called economy was misplaced, and where true national economy was to provide adequately for health and prevention of disease. The first suggestion of the Royal Commission was in regard to specialist benefit. The Commission said: "While it has been inevitable hitherto that medical benefit should be confined to a general practitioner service, this limitation has detracted from the value of the benefit and its removal is urgently desirable." Then, in the order of desirable extended benefits recommended, the specialist service was given first place; next came allowances to dependents, and then provision of additional maternity benefit. The question of specialist benefit was of great importance. If the lowering of the State grant had not prevented the provision of specialist benefit why was it that they had not got it, and why was it that there was no early prospect of getting it? The present position in regard to specialist benefit for an insured person requiring a consultation or operative treatment was exactly the same as that of an uninsured person. Unless it was an urgent case, which would be admitted to the voluntary hospital immediately, he came on the hospitals' waiting-list and had to take his turn, with the consequence, as happened in so many cases, that treatment was delayed beyond the time when it would be of the greatest advantage. The recent Commission on Hospitals in Scotland stated that there was a waiting-list of no fewer than 5000 in the case of the four big Scottish hospitals, and that at least 3000 more beds would be necessary to provide adequate hospital accommodation in Scotland. A condition of affairs which left the insured person dependent on that source for specialist benefit was obviously unsatisfactory. Ordinary ailments could be dealt with by the general or panel practitioner. The more serious cases might require operative treatment, the very latest laboratory appliances, X ray or light treatment, and others required aids from which, at present, the insured person was shut out. There ought to be no class distinction in the provision of medical and surgical skill. The finest medical and surgical skill ought to be assured to the very poorest of our population. Yet here they had a scheme which purported to be a national scheme for the provision of medical service for the insured persons who contributed to it, and surely the Royal Commission were right in pointing out that so long as specialist treatment was withheld, the system was unsatisfactory and did not meet the needs and the rights of its members. The question was obviously linked up with the hospital question, which this Bill did not tackle at all. The voluntary hospitals had repeatedly made requests for allocations from the Insurance Fund proportionate to the number of patients they treated, but all they had here was a permissive clause which would enable societies to make contributions to hospitals. Before the Economy Act was presented to the House certain approved societies did make contributions to hospitals, but since that Act had come into operation it had been difficult or impossible for them to do so. Now they were to be permitted to give donations to count as medical benefit; but that would not meet the case. Either an allocation of money per head, or some other financial arrangement between the insurance Fund and the voluntary hospitals would be necessary. It was desirable for two reasons. In the first place in order that the insured persons should not, as now, get specialist treatment as charity, and, secondly, in order that the voluntary hospitals, or even, as they expected might be the case soon, municipal hospitals, should be assisted to carry on the difficult task of finding the necessary funds. Maternity benefit had been spoken of and he was very glad to hear Colonel Fremantle emphasise so strongly the need of nursing and medical service as well as financial assistance. The Queen had lately called attention to this subject, and it was a matter of some concern that for 100 years they had made no improvement in the figures of maternal mortality. In England and Scotland they had some six or seven deaths per 1000 births and in many of the industrial and poorer districts the mortality-rate was up to 11 and 12 per 1000 births. That was a very unsatisfactory state of affairs, and as Colonel Fremantle had pointed out, the provision of efficient nurses and midwives was one of the best ways of meeting the situation. He commended Colonel Fremantle's suggestion that through the national health insurance organisation means should be found for training and supplying more midwives than were at present available. There were few subjects on which Members of that House would more willingly coöperate than in making it more safe for the mothers of our country to discharge the great task which they undertook for the nation. Similar considerations applied to the question of dependents' benefit. The wives and children of insured persons ought to be within the scope of the scheme, otherwise it was not a comprehensive and truly national one. The present scheme was not adequate in the matter of sickness benefit. While there was something to be said for the flat-rate system, it would be found that almost all the other countries had a higher rate of sickness benefit than we had. He was glad that the Minister of Health had relieved the minds of many members to a large extent by his statement about dental benefit. It was desirable that the Dental Joint Committee should be made a statutory body. Reference had been made as to the anxiety of the dental profession in regard to clinics. It was in the interests of insured persons and of the general public that they should have men and women of good professional status and with the corresponding sense of responsibility both in the dental and medical professions. The anxiety of the dental profession that the purely professional side should not be interfered with was quite reasonable, and in the public interest. Personally he would not approve of clinics being run by approved societies. He was glad to hear, therefore, that members of the dental profession would be represented on the management of the clinics. It was also very important from the public point of view, as well as from the point of view of the dentists, that there should be a free choice for patients, and he was glad that that privilege had been preserved. There was no doubt that if dental benefit were made an ordinary form of treatment and if full dental benefit were given to all insured persons the health of the members would be very considerably improved. There were many diseases caused by bad teeth. A great deal of the rheumatic diseases, about which so much was heard in industrial life, and which produced a very heavy sickness-rate with important economic complications, were really a form of chronic infection due to bad teeth. Therefore the expenditure on dental benefit was, in the long run, a very economical expenditure. The same applied to a lesser extent to the efficient treatment of the eyes. The supply of proper glasses to people who suffered from eye-strain was very important. It was important to emphasise the fact that although the Royal Commission had recommended these additional benefits and public opinion approved them, it was impossible to supply them without a restoration of the State grant which was given before the Economy Bill was passed into law. He very strongly urged the Minister of Health to put up a stronger fight with the Treasury to ensure that economy was not practised on the health of the people. If this Bill could not be sufficiently amended, he hoped another measure would soon be introduced, bringing in some of the more important provisions which the Royal Commission thought necessary. They must look forward to a time when the national health insurance service would be a real comprehensive service, developed not so much on curative lines as on preventive lines. Many of them looked forward to the time when the normal task of an insurance medical practitioner would not be so much that of curing people of as examining them periodically so that the earliest signs of disease could be detected. That comprehensive scheme could not be carried out until the extended benefits now so much needed were given. That, again, could not be brought about unless more money was brought into the scheme, which could only be done by a restoration of the proportion of the State grant which they had before the Economy Act was passed.

Increase in Sickness Benefit.

Sir H. CAUTLEY said that he viewed with great apprehension the steady increase in the amount paid out in sickness benefit all over the country. Unless some steps were taken to check this expenditure the whole scheme, sooner or later would be jeopardised. The extensive unemployment of the last few years might account for some of this increase, but not altogether, because it happened that in the rural societies where there had been no unemployment the same

mptoms existed. Probably it might be true that the crease of sickness benefit was greater in the large industrial ntres which had been hardly hit by unemployment. The heme for the administration of sickness benefit rested tirely with the doctors and the only control was the ppointment of a medical referee. He did not think the stem could be improved in that respect. The sole judge when an insured person required medical service and ould receive his certificate to get medical benefit must be e doctor, subject to the procedure relating to the medical feree. His suggestion to the Minister was that if the doctor as entrusted with this responsible work, his position ought be made as far as possible such that it did not conflict ith his duty. At present an insured person could, on a mere him, because it would annoy his panel doctor, at once say: I will change my panel doctor and go to someone else." iat system was, he was perfectly certain, working in this ay. He made no charge, either against insured persons or nel doctors, but if an insured person was feeling ill and he ought his doctor did not consider him ill enough if the ctor said "You are not bad enough to stop work, or to ve sick pay," then, in a fit of annoyance, he said "I will to a neighbouring doctor and go on his panel, because he easier." Let the House look at the position of a certifying ctor in such a case. He had, as his private patients rhaps, the man's wife and family, and if he lost that rticular patient he lost the whole family. The same thing ppened when a doctor had to certify the patient as being benefit. His (Sir H. Cautley's) suggestion was that no e should be entitled to change his doctor without giving, y, three or four weeks' notice. In such cases as those to nich he had referred, no doubt the fit of irritation would ve worn off in a day or two, the person would have gone ck to work feeling better, the whole thing would have blown er, and he would no longer have any desire to change his ctor. It had also been suggested to him that, in addition notice, reasons should be required, but he did not approve that. It would encroach on the free right of choice of ctor, in which he was a great believer. It would also an the setting up of some sort of tribunal to investigate e reasons. He firmly believed, however, that if some ecific period of notice had to be given there would be a very rked difference in the amount of sickness benefit paid out. the few societies with which he was directly concerned, had been found that in many cases where they had had to point a medical referee the patients had never gone to e medical referee at all, but had at once gone back to work. many other cases the medical referee had upset the rtificate that had been given. He was told the other day, ough he could not vouch for it, that in an instance in the ighbourhood of Bristol, where a referee was appointed to amine some 3000 cases, roughly speaking only 1000 came fore the referee. The mere fact of his appointment sent any of these people back to work and there the matter led. In many of the other cases the medical referee charged the certificates that had been given and said at the patients were fit for work. In only one-third of e cases, roughly speaking, was the decision of the doctor intained.

Lay Control

Dr. VERNON DAVIES said that the only way the opposition uld attack this Bill was by making some obscure reference a past raid on the insurance fund and by pointing out that e Minister of Health was very subservient to the Chancellor the Exchequer. If that were true, it increased his (Dr. vies's) admiration for the Chancellor of the Exchequer if had sufficient power to overawe or to guide the Minister Health, because among the medical profession in this ntry the Minister of Health was not by any means regarded a soft man. In fact they found him rather difficult to l with and perhaps sometimes a little autocratic. With ard to the question of the medical aid societies or clubs, ough he held no brief for the British Medical Association, imagined that the objection they had had for a long time s that the system adopted by these societies put medical n under lay control. For some years now he believed the sociation had taken certain steps to advise medical men to apply for these appointments. What happened in se cases was that the medical man became the servant of ay committee who had power to dismiss him.

Mr. MORGAN JONES: Just as in the case of the medical cer of health.

Dr. DAVIES said that when they applied the Insurance Act these medical aid societies they were in a different sition at once, because the essential thing under the surance Act was that the patient must have freedom of oice of doctor and he had not that choice in the case of clubs. That was one of the great objections to the sent system, but from all that he had heard he believed e standard of medical treatment which these medical aid sieties had been able to give had been very high. Although e societies had perhaps not met with the approval of ne members of the medical profession, the medical men who had served them had been of a high standard professionally and the members of these societies had probably received equally as good treatment as any other people in the land. Personally, if he interpreted the clause rightly, he believed that the existing medical aid societies would not be interfered with, but he hoped that no new societies would be allowed to be formed. He did not agree with all that had been said on the question of maternity mortality. It was a difficult thing. It was not entirely due to a lack of midwives, as some of his medical colleagues would suggest. There were a number of midwives in the country who would not undertake ordinary midwifery; they wanted to become nurses at welfare centres and objected to do the rough and tumble of going out every night in the week. That was one of the great difficulties. But the greatest difficulty of all was not the lack of medical attendance or sufficient nursing attendance; it was the conditions under which the confinement took place which was the danger at the present time. A great move towards improving the condition of affairs would be to move such patients into a home where they could be attended to by their own doctor and their own nurse. The question of dental clinics was important, and if these joint dental boards were to be set up he thought that the dentists should be represented. It was suggested that in the case of experimental dental clinics the approval of the dentists in the district was not essential. There was, however, a certain amount of danger in that. They might have one or two of the superior dentists in the district who would not touch this insurance work because the fees were not large enough, but they might go on the dental board and give the benefit of their advice. The men who were doing the actual work might in that case be overlooked, and there might be a difficulty in running the experimental clinic if the dentists of the district were not in cordial agreement. He hoped that the Minister would bear that point in mind. The essential thing in ophthalmic benefit was that the insured person should receive efficient and satisfactory advice and the scheme which the British Medical Association had suggested to supply a sufficient number of trained doctors who would work at fees suitable for approved societies was the best way to deal with the subject. Ophthalmic clinics would be run by qualified men who would give the best attendance and attention at the lowest price. He hoped that the Minister would not allow freedom of choice in that matter. He thought that something should be put in the Bill so that some benefit might be given to pregnant women at the time they needed it. Another omission from the Bill was in regard to the question of secrecy concerning venereal disease. The Minister knew that a guarantee or promise was made to panel practitioners that any information received in connexion with the treatment of venereal disease was to be held secret and inviolable. That guarantee or promise was made also to insured people, but now a judge in the High Court had decided that a panel practitioner could be compelled to disclose such information. The Minister ought to recognise this difficulty and something should be put into this Bill to meet it. He would ask the Minister to remember that there was a preventive as well as a curative side to national health insurance and personally he had doubts as to whether the most economic way of getting rid of their surpluses was by establishing dental and ophthalmic benefits. At the ages when those benefits applied people, as a rule, were capable of full work and could afford to pay the dentist and eye surgeon. More good would be done if instead of pushing their surpluses forward they pushed them backward, and did something to establish clinics for rheumatism where they could get at the children and the young people after school age when rheumatism was so dangerous, give sunshine treatment, and by other means help to establish a firm foundation of health at an early age, so that when they did enter into industrial life they would be fitted for it in every way.

Medical Institutions.

Mr. JOHN, referring to Clause 3, which dealt with the administration of medical benefit, said that if they read the clause they would conceive that though the hands were the hands of the Ministry of Health the voice was the voice of the British Medical Association. Clause 3 would abolish medical institutions. He (Mr. John) had been connected with medical institutions for the last 16 or 17 years, and he had never heard the name of "clubs" attached to them. It was not intended that the original Act should be a preventive or deterrent factor in connexion with the approval of medical institutions. This clause, however, would refuse the right of further existence to these medical institutions. One could not understand this refusal of further approval. No complaints had been brought against these institutions and they were subject to approval every year by the insurance committees. The operation of the clause would militate against the best interests of the members of these medical institutions and their families. Not only so, but the clause would be detrimental to the real object of providing the best

medical service and treatment for insured persons. One of the intentions of the National Health Insurance Act was to extend the scope of medical service and give benefit to a greater extent than had been possible in the past. One of the definitions in the regulations with regard to medical service was that the treatment which the practitioner was required to give to his patients comprised all proper and necessary medical services other than those involved in the application of special skill and experience of a degree or kind which general practitioners as a class were reasonably not expected to possess. If he understood that regulation correctly the real intention was to confine the panel patients to one doctor only, and to rationalise the work of the medical practitioner in the same way as was done by the fixing of the capitation figure. Although there was a free choice of doctors, once a man had chosen his doctor then he was entitled to the services of that doctor alone. The medical institutions were really getting down to the fundamentals and the objectives of the National Health Insurance Act itself on the lines of attempting to coördinate the whole of the medical services. The benefits not only included what was contained in the regulation to which he had referred, but the other benefits of the medical institutions. He (Mr. John) was a member of a medical institution called the Mid-Rhondda Medical Aid Society, and in addition to medical benefits contained in the regulations, such as proper aid and diagnosis of the complaint or disease, there were the use of the pathologists and second opinions with respect to expert specialist advice. Dr. Davies had been aguing for the right to increased benefits in the direction of pooling a certain proportion of funds for the payment of experts or specialists. That was not necessary with the medical institutions. The medical institutions at present provided expert and specialist advice and special treatment. They also provided all the laboratory facilities and dental and ophthalmic treatment and benefits. Again, professional nurses were provided by the medical institution, and not only electric treatment, but light treatment and massage.

Reply to the Debate.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health), replying to points raised in the debate, said that all the leaders of the approved societies up and down the country desired that the Bill should have a speedy passage to the Statute Book. But for the opposition of the approved societies of the country it would be perfectly possible to put into operation the scheme of specialist services without bringing any additional funds into the national insurance system at all, and no one had a right to say in that House that the specialist services were not being adopted on account of the Economy Act, or of any question of finance. The Royal Commission went very carefully into the question of specialist services and they stated that if the approved societies would come to an agreement and pool their funds that scheme could be put into immediate operation without any further addition whatever either by way of extra contributions or by way of State assistance. To carry out the suggestion that medical treatment should be provided for the dependents of insured persons would mean bringing in altogether, including the people who were already in the scheme, a total of not fewer than 31 million people, and the cost would be an additional £10,000,000 a year. He could assure the House that his right hon. friend would give very sympathetic consideration to any amendments moved in committee which were designed to improve the Bill.

The motion for the rejection of the Bill was rejected by 206 votes to 95 and the Bill was read a second time.

WEDNESDAY, APRIL 4TH.

Free Choice of Opticians.

Lieut.-Colonel MASON asked the Minister of Health whether, under the National Health Insurance Bill, the complete freedom of insured contributors to choose their own opticians would in any way be impeded.—Mr. CHAMBERLAIN replied: There is not in the National Health Insurance Bill, nor is there any intention to include in any regulations to be made under the Bill, any provision which would place an insured person in a less favourable position than hitherto with regard to the arrangements for obtaining ophthalmic benefit.

Removal of Children from Workhouses.

Mr. CONNOLLY asked the Minister of Health how many boards of guardians in England and Wales had complied with Article 4 of the Poor Law Institutions Order, 1913, which required the removal of all children above 3 years of age from the workhouse; and how many boards had not so complied.—Sir KINGSLEY WOOD replied: The number of boards of guardians who, for one reason or another, find themselves unable to comply completely with Article 4 of the Poor Law Institutions Order, 1913, may vary from day to day, but it would appear that, out of a total of 625 unions in England and Wales, there are 74 in which the Order is not regularly observed.

Pensioner and Specialist Medical Treatment.

Dr. SHIELS asked the Minister of Pensions if he was aware that pensioner 1/MM/2659, Charles Mackenzie, Musselburgh, applied for examination for an ear condition on Feb. 2nd last; that examination by the Ministry doctors was delayed till the 8th, when he was referred to his panel doctor for treatment; that his panel doctor said his case was one for an ear specialist, but that, on application to the Ministry for re-examination, this was refused on Feb. 25th and 29th; that on the 29th he was examined by the chief aural surgeon of Edinburgh Royal Infirmary, who advised and was proceeding to arrange for an early operation, but that owing to his being a pensioner the case had to be referred to the Ministry of Pensions who, on March 14th, wrote stating that the matter was still being considered; and would he explain the attitude of the Ministry in this case, in view of the serious possibilities of middle-ear disease from which this pensioner was suffering.—Lieut.-Colonel STANLEY (Parliamentary Secretary to the Ministry of Pensions) replied: This pensioner has received treatment from my department on many occasions during the past seven years, and operative treatment has frequently been recommended and offered to him. He has hitherto refused to undergo operation, and it has been found that no other form of specialist treatment was necessary. As he has now expressed his willingness to accept operative treatment, arrangements have been made to admit him to a Ministry hospital for the purpose.

Gas Fumes from Artificial Silk Works.

Mr. ROBERT YOUNG asked the Minister of Health whether any inquiries had been made by his department regarding the nature of the gas produced in and emitted into the atmosphere by artificial silk works; whether he was aware that this gas was said to be poisonous, and that the irritation produced by it was sufficient to cause pneumonia in young children; and that in some areas adjacent to such works doors and windows had to be kept closed because of the gas fumes.—Sir KINGSLEY WOOD replied: My right hon. friend understands there have been cases of emission of unpleasant gases from some works, but he is not aware of any injury to the health of residents in the neighbourhood of the works. My right hon. friend is, however, having further investigation made and, if the hon. Member has any information, I shall be glad if he will send it to my department.

Artificial Lighting Research.

Sir ROBERT THOMAS asked the President of the Board of Trade whether, in view of the importance of efficiency in artificial lighting, as affecting the eyesight of the nation, his department would be represented at the International Illumination Commission to be held in America in September next; and whether facilities would be given for representatives of the National Physical Laboratory and other public institutions, whom this question concerned, also to be present.—Sir PHILIP CUNLIFFE-LISTER replied: My department will not be represented at the conference mentioned, but His Majesty's Government will be represented through the Department of Scientific and Industrial Research. I understand that certain of the technical and industrial organisations concerned in the subject will also send representatives.

Dysentery among Native Prisoners in Solomon Islands.

Mr. WELLS asked the Secretary of State for the Colonies if he had any information with regard to the death of 11 natives imprisoned at Sinarango, in the Solomon Islands.—Capt. MARGESSON (Lord of the Treasury) replied: I regret to say that there has been an outbreak of dysentery among the prisoners, and that eight deaths have been reported. All possible measures have been taken by the senior medical officer to deal with the outbreak and the situation is said to be improving.

Insured Persons and Cost of Mileage and Drugs.

Sir ROBERT THOMAS asked the Minister of Health what was the yearly rate of contribution per head among persons insured under the National Health Insurance Act towards the cost of mileage and drugs in England and in Wales respectively.—Sir KINGSLEY WOOD replied: There is no provision for a specific contribution per head among insured persons towards the cost of mileage and drugs. The National Health Insurance Act, 1926, provides for an inclusive sum not exceeding 13*s.* a year per insured person, to be applied for the purpose of meeting the cost of medical benefit, the administration expenses of insurance committees, and any expenses incurred by the Minister in connexion with the administration of benefits. The amount available out of the 13*s.* for meeting the cost of mileage and drugs together is 3*s.* 3*d.* per insured person in each country. As, however, the total expenditure on mileage and drugs in Wales exceeded the amount available, the Act authorises payment out of the National Health Insurance Fund (England) to the Welsh

ational Health Insurance Fund for the purpose of meeting e excess expenditure.

Eye Disease in the Navy.

Sir ROBERT THOMAS asked the First Lord of the Admiralty nether any inquiry had been held into the fact that out a total, in 1926, of 1726 invalided from the Navy from l causes of injuries and disease, as many as 386 were on count of diseases of the eye.—Lieut.-Colonel HEADLAM arliamentary Secretary to the Admiralty) replied: An alysis of the 386 cases of men who were invalided in 1926 der the heading, "Diseases of the Eyes," shows that of is number 345 were due to congenital deformities of the e—namely, long sight, short sight, and astigmatism—ich brought the individual concerned below the visual ndard required in the rating held by him. Five men re invalided for defective colour vision. Of the remaining cases, three were due to injury, three to cataract, three iritis, and the others to chronic inflammatory or degene-tive conditions (ulcer, keratitis, retinitis, &c.). In w of the facts disclosed by this analysis I do not think at a special inquiry would serve any useful purpose. e hon. Member will appreciate that the detection of ent errors of vision is not easy, and that it is in conse-ence of the more frequent and rigorous examinations ich are now held after a man has joined the Service that se defects come to light.

THURSDAY, APRIL 5TH.

Replacement of Insanitary Welsh Schools.

Sir ROBERT THOMAS asked the President of the Board of ucation whether he was aware that 71 elementary schools Wales, accommodating an aggregate of 16,890 pupils, d been condemned as insanitary; and what action he posed to take to provide alternative accommodation thin reasonable distance of the children's homes.—rd EUSTACE PERCY replied: I am aware that there are present 71 elementary schools in Wales in category A the Black List. This does not, however, mean that all se schools are "insanitary" or that they have been ondemned." The Board are in constant communication h the local authorities and, in the case of voluntary ools, the school managers, in regard to individual cases, l, while the rate at which the schools can be replaced is ditioned by the particular circumstances of the individual as concerned, I think that, generally speaking, reasonable gress is being maintained.

Overcrowding of Amersham Infirmary.

Mr. SHEPHERD asked the Minister of Health whether his ention had been called to the report of the Amersham ard of Guardians with regard to the overcrowding of the rmary, in which it was stated that the conditions in the rds were very undesirable; that there was no possibility separating unpleasant and contagious cases from ordinary ients; that two cases at least amongst the men should in a separate small ward, one being a cancer case; that ase of phthisis in the women's ward was in a very infec-us state; that patients who were able to get up had to e their meals in close proximity to dying patients and ers who were helpless, and from the nature of their illness y unpleasant in their habits and conditions; and whether would immediately take steps to put an end to these ditions.—Sir KINGSLEY WOOD replied: My right hon. nd has received a copy of the report made by a com-tee of the Amersham Board of Guardians containing the tements to which reference is made in the question. e committee was one appointed by the guardians to sider the arrangements to be made to deal with the rcrowding at the infirmary. It is reported that arrange-nts were at once made to alleviate some of the matters rred to and others will receive the early consideration the newly elected board of guardians. My right hon. nd has no reason to suppose that further necessary ion will not be taken at the earliest possible date, and he poses to keep in touch with the matter.

ARTIFICIAL SUNLIGHT RESULTS.—In his report to annual general court of governors of the City of London spital for Diseases of the Heart and Lungs, Dr. H. lford Howell, tuberculosis officer for Hackney and Bethnal een, stated that artificial sunlight had not yielded the efits that had been expected. "Our experience," he d, "is that the majority of our cases have benefited little, in only one or two instances has definite improvement owed such treatment. Some cases, indeed, were worse. strong do well, but the weak do worse. Unfavourable ults are reported in febrile pulmonary tuberculosis, and s found that some patients, especially children, are stitutionally unfitted for treatment."

Correspondence.

"Audi alteram partem."

THE FOUNDLING SITE.

To the Editor of THE LANCET.

SIR,—I have read with much interest the annotation on this subject in your last issue. My interest may perhaps be judged to be biased, for without hesitation I admit that during the last three years I have exerted all my efforts toward winning the Foundling site for the Hospital for Sick Children, Great Ormond-street. Previously to this I visited in my spare time over 20 different country sites in order to obtain a suitable one for a country annexe. This, as is stated in your annotation, is now located at Tadworth. I have made the efforts with the conviction that, if these ends are achieved, in the future not only will English children greatly benefit, but the position of this country as a pioneer in the study of children's ailments will be strengthened and its international prestige in medicine thereby increased.

A necessary outcome of my views has been a very careful consideration of the principle which is lucidly summarised in your article in the sentence suggesting that Tadworth might in the future become the "centre of gravity" of the hospital. I should like to state my personal belief that it is not possible for a country annexe of a city hospital of the pioneer type to have in the true sense its centre of gravity in the country. I am sure that as years go by such a country annexe hospital will be of ever-increasing value, but there are certain insuperable objections to its becoming the centre of gravity or, as has often been expressed in other terms but not so well, that the city hospital will be only a clearing station. Among them are the following.

There will always be three classes of patients requiring the city hospital; the urgent cases medical and surgical, the obscure and undiagnosed cases, and those not necessarily obscure or urgent which are needed for special observation, research, and teaching. All physicians and surgeons, particularly those attached to children's hospitals, must, I believe, recognise that there are numerous cases acutely ill who could not be transferred without risk even 15 miles out of London. There will be some of these who unexpectedly develop an infectious disease and often an unexpected surgical crisis requiring highly skilled care. Special hospitals, naturally, are often confronted with most difficult cases, either beyond our powers of diagnosis or requiring for diagnosis very special methods of investigation. Useful and necessary laboratories can certainly be attached to the country hospital, but those required for special work and research must be in the city hospital, where they are in touch with every resource and can obtain special apparatus and so forth at the shortest notice.

Then again this hospital is a recognised teaching centre, and this entails providing for post- and under-graduate students' knowledge abreast of modern methods and also providing new methods, new ideas, and new facilities, if it is to be a pioneer institution. For this there must be at the city hospital clinical cases, scientific plant, and general organisation. It is asking too much to expect students to journey 30 miles for instruction. Research, an essential element in a pioneer hospital, must be in close and easy touch with all avenues of knowledge and must also have its chief home in the city hospital on account of the necessary equipment. These three elements—clinical and scientific facilities, teaching, and research—constitute, I venture to think, the centre of gravity of such a hospital.

There are other difficulties. Many parents (and I should be one) do not like their children with dangerous and obscure illnesses sent miles away at a moment's notice. Physicians and surgeons cannot, in the twinkling of an eye, manage journeys which

absorb two hours; yet it is essential for the vitality of a hospital that its honorary officers can carry out their duties. What may evolve when air transport is perfected I cannot foretell, but I believe that if now a pioneer special hospital in London, be it for children or any other object, were to shift its centre of gravity to the country two results would happen. First, the city hospital would lose its position in the medical world, and secondly, the country hospital would be gradually starved.

I am, Sir, yours faithfully,
F. JOHN POYNTON.

Devonshire-place, W., April 10th, 1928.

NASAL OBSTRUCTION AS A CAUSE OF DEAFNESS.

To the Editor of THE LANCET.

SIR,—I congratulate Dr. Macnaughton Jones upon the position he has taken up. For years I have been insisting upon the paramount importance of nasal obstruction in the production of many cases of catarrhal middle-ear deafness. But Dr. Macnaughton Jones goes too far in one direction and not far enough in another. On the one hand, I deprecate, and have long deprecated, the extensive and routine use of the cautery. It is a method which, on account of its scalding action (for, however much one tries to dry the nasal mucous membrane there is always too much moisture), is wider in effect than we can control. Consequently it frequently does more harm than good by the destruction of cilia in the area around its application. On the other hand, the effect of nasal abnormalities is not entirely one of obstruction; it is also one of *imperfect nasal drainage*, whereby acute catarrhal conditions are predisposed to, and chronic catarrhs set up and maintained. I have treated cases of early chronic catarrhal deafness years ago that recovered perfectly and have now forgotten that they were ever deaf—they were "caught in time," and dealt with seriously, not by temporising with washings or cautery. Others and similar cases who refused operation, either because they thought they knew better or because another otologist vetoed it, have progressed to chronic deafness and have returned in despair in later years. In some cases, again, the nasal catarrh either failed to improve after correction of the abnormality or there was no obvious cause for it in the nose. In such instances the underlying cause has proved to be a toxæmia, usually intestinal.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY.

Wimpole-street, W., April 9th, 1928.

CONVALESCENT MEASLES SERUM.

To the Editor of THE LANCET.

SIR,—With reference to an attempt to control an epidemic of measles, published in your issue of March 17th (p. 548) I would like to support Dr. McClean's plea that convalescent measles serum should be made available to the public. I had occasion recently to try to procure such serum for a child to whom an attack of measles would have been dangerous; after trying various fever hospitals without success, I finally wired to a friend in Paris, who was able to procure it without difficulty at one of the children's hospitals, where it is collected from other hospitals, tested, and prepared for distribution. It would surely not be difficult for the Ministry of Health or the Metropolitan Asylums Board to organise a similar service in London and other towns; the coöperation of parents and ratepayers might be more readily secured by a little judicious propaganda through the press and wireless.

I am, Sir, yours faithfully,
C. L. C. BURNS.

St. Leonards-terrace, Chelsea, March 30th, 1928.

TONSILLECTOMY AND RHEUMATISM.

To the Editor of THE LANCET.

SIR,—Dr. K. Douglas Wilkinson and D. A. Ogilvie, in their paper on Rheumatism, Tonsils and Glands (THE LANCET, March 31st, p. 647) publish some interesting and valuable figures on this subject. They express doubt as to whether "the numbers under consideration are too small to allow of any definite conclusion." As the matter is one of much importance, and interests me personally as a member of the Liverpool Rheumatism Committee, I have worked out the probable errors of their figures which are included in the following two tables. Table II. will now read as follows:—

Present state.	Tonsillectomy, 35 cases. Number and percentage.	Non-tonsillectomy, 45 cases. Number and percentage.	Difference and probable error per cent.
(*a*) Heart normal..	15 (42·8)	12 (26·7)	16·1±7·3
(*b*) Heart damaged	8 (22·8)	12 (26·7)	3·9±6·7
(*c*) Cardiacs	9 (25·7)	15 (33·3)	7·6±7·0
(*d*) Dead	3 (8·7)	6 (13·3)	4·6±4·8
(*b*) } Together .. (*c*) }	17 (48·5)	27 (60·0)	11·5±7·5

Table IV. is better rearranged in the following manner:—

TABLE IV.—*Rheumatic Children.*

Heart condition.	Normal tonsils. Number and percentage.	Diseased tonsils. Number and percentage.	Difference and probable error of difference
Normal	20 (54 ±5·5)	6 (20±4·9)	34 ±7·4
Damaged	9 (24·3±4·7)	9 (30±5·6)	5·7±7·4
Diseased	8 (21·7±4·6)	15 (50±6·1)	28·3±7·6
Total	37 100·0	30 100·0	—

The examination of these tables shows that the only figure which is three times its probable error is that giving the difference in percentage of cases with normal hearts between those having healthy throats and those having tonsils and glands, the opposite being true of those with "diseased" hearts. This shows that the figures are sufficient to indicate that rheumatic persons with normal tonsils are definitely less likely to have developed heart disease than those with diseased tonsils. The figures published with regard to tonsillectomy, however, though suggestive, are hardly sufficient definitely to show the beneficial effect of the removal of the tonsils.—I am, Sir, yours faithfully,

C. O. STALLYBRASS,
Assistant Medical Officer of Health, Liverpool.

April 5th, 1928.

SIR DAVID FERRIER AND THE WEST RIDING MENTAL HOSPITAL.

To the Editor of THE LANCET.

SIR,—In your obituary notice of Sir David Ferrier you refer to an "invitation from Sir James Crichton-Browne, at the time superintendent of the West Riding Lunatic Asylum, to embody in the asylum reports the early results of his experiments." May I add the following quotation from "Experimental Researches in Cerebral Physiology and Pathology" (the West Riding Lunatic Asylum Medical Reports, vol. iii., 1873):—

I have to thank Dr. Crichton-Browne for kindly placing at my disposal the resources of the Pathological Laboratory of the West Riding Asylum, with a liberal supply of pigeons, fowls, guinea-pigs, rabbits, cats, and dogs for the purposes of my research.

This quotation indicates—what, to the West Riding Mental Hospital, Wakefield, is a fact of great

nportance—that the actual experimental work arried out by Sir David Ferrier on the localisation of nction in the brain was performed in the laboratories f this institution. This is the reason why the research as first published in our Medical Reports for 1873.

I am, Sir, yours faithfully,

J. SHAW BOLTON.

West Riding Mental Hospital, Wakefield, April 2nd, 1928.

NAVAL INVALIDING.

To the Editor of THE LANCET.

SIR,—In the course of a discussion in the House of ommons on invaliding from the Navy for tubercu-osis the official apologist admitted that the rules ight be too severe, and that the doctors were not iven sufficient latitude. Doctors on boards have to ork under the rules laid down for them, just as dges have to do under Acts of Parliament. What, hen, are the rules? They are given in part in a tter from the First Lord, which I quote from Hansard, "Before a disease can be accepted as ttributable to the Service it must be shown to have eveloped out of unusual conditions." But phosphorus ecrosis of the jaw surely developed out of what were hought usual conditions; was it then not attributable o phosphorus match-making? The conditions of attributability" may have to be changed, and trust the newly announced committee on attri-utability will consider this point, for there are any who think the conditions on board are at ault. Those conditions will come under review by he also newly announced board on hygienic con-itions, which should reduce the incidence of the isease. It has increased in the Navy in each of the ast two years (1924–25), of which we have been given omplete figures. Naval invalids have themselves o prove attributability; in the armies of the United tates and France invalids get disability pensions, nless the Service proves the disability to be the an's own fault. The naval invalid, when he has xhausted his savings, becomes a charge on the oor-law—in other words, the country must at last upport him. Why should he not be continuously aintained until he is cured by the Service to which e has given his best. That he is cast off by old riends and has to deal with a new and strange uthority increases by much the hardship of his nvalid condition.

I am, Sir, yours faithfully,

March 30th, 1928. NAVAL SURGEON.

The Services.

ROYAL ARMY MEDICAL CORPS.

Capt. R. Le G. Worsley to be temp. Capt., and temporarily elinquishes the rank of Capt.

Lt. E. H. Hall is secd. for duty with the Sudan Def. Force.

J. E. Swyer to be Lt. on prob.

ARMY DENTAL CORPS.

R. G. J. Tovey, A. K. Inglis, W. McD. Birse, W. P. axendine, and N. I. Macmillan to be Lts. on prob.

TERRITORIAL ARMY.

Col. M. B. Ray, having attained the age limit, is retd. on ompletion of his tenure of appt. as A.D.M.S. 47th (2nd ond.) Div., and retains his rank with permission to wear ne prescribed uniform.

Lt.-Col. (Bt. Col.) L. D. Bailey from the Gen. List, .A.M.C., T.A., to be Col., and to be A.D.M.S. 47th (2nd ond.) Div.

Maj. A. E. Evans to be Lt.-Col. and to comd. the 140th Co. of Lond.) Field Amb.

Lts. P. J. Stokes, A. Swindale, and C. A. Cowie to be apts.

H. B. Trumper to be Lt.

ROYAL AIR FORCE.

Flight Lt. H. E. Hayes (Temp. Capt., Dental Surg., en. List) relinquishes his temp. comn. on relinquishment of is Army commission.

RESERVE OF AIR FORCE OFFICERS.

Honorary Flight Lt. W. G. Weston is promoted to the rank of Honorary Squadron Leader.

COLONIAL MEDICAL SERVICES.

H. U. Leembruggen, Provincial Surgeon, Ceylon, to be Medical Superintendent of the General Hospital, Colombo.

The following appointments have been made by the Secretary of State for the Colonies during the month of March: T. F. Anderson, Medical Officer, Kenya; R. V. Bowles, Medical Officer, Uganda; V. V. H. Hookai, Assistant Government Medical Officer, British Guiana; C. J. Austen, Medical Officer, Fiji; H. M. Boston, Medical Officer, West African Medical Staff, Gold Coast (Achimota College) and Capt. G. Winter, Medical Officer, West African Medical Staff.

MEDICINE AND THE LAW.

THE VITAMIN-CONTENT OF COD-LIVER OIL TABLETS.

ON April 4th the Salford stipendiary magistrate (Mr. Atkin) had before him a prosecution by the Salford Corporation against Messrs. Boots Cash Chemists (Lancashire), Limited, for the sale of cod-liver oil tablets not in conformity with the Food and Drugs Act. The case for the prosecution was that cod-liver oil tablets had been sold which were not of the nature demanded. A sample of "McCoy's Cod Liver Oil Extract Tablets" which had been sold to a Salford inspector had been examined by the city analyst, who reported that it contained among other ingredients 3·2 per cent. of oil characteristic of an alcoholic extract of cod-liver oil. Judged by the colour test this oily matter lacked vitamin A, one of the most valuable constituents of cod-liver oil, and apart from this, about 160 tablets would be necessary to obtain a minimum dose of cod-liver oil. Samples sent to the laboratories of the Pharmaceutical Society of Great Britain for biological tests were found to be lacking in vitamins A and D. The defending counsel, Mr. Whitehead, K.C., protested that he had had no instructions about vitamin D, and the question of adjournment was discussed. Eventually, however, witnesses were called. These included, for the prosecution, Dr. J. H. Burn, director of the Pharmacological Laboratories of the Pharmaceutical Society, and Miss Katharine Coward, D.Sc., who had actually performed the tests. These witnesses gave evidence as to the function of the laboratories, the guides available as to fair tests for tablets called cod-liver oil tablets, and the results of the actual animal experiments made. The laboratories had been established in order to enable manufacturers to have tests carried out which involved the use of animals; as director of the laboratories, Dr. Burn was responsible for all the work that was done. There were no official tests in this country for cod-liver oil, but one guide which was included in the United States Pharmacopœia was a test for vitamin A; while a second guide was found in the generally accepted view that cod-liver oil was able to cure rickets. The biological tests involved the use of rats prepared for experiment by having been fed on a diet free from vitamin A. Those rats, which received a daily dose of 0·01 g. of the tablets died within 14 days, whereas those which received a daily dose of 0·002 g. of cod-liver oil ceased to lose weight and resumed growth. A further test applied to see whether the tablets would cure rickets in rats proved negative, a similar dose of cod-liver oil curing the rickets in other rats of the same batch. Dr. Coward had had eight years of experience of tests for vitamin A and two and a half years' experience of tests for vitamin D. In answer to a question, Dr. Burn stated that in view of the results of the tests his opinion was that medicinally, as a substitute for cod-liver oil, the tablets were worthless.

The witness called for the defence was Mr. H. Droop-Richmond, chief analyst at the Boots laboratory in Nottingham, who stated that it was not until the present prosecution had been started that he handled the McCoy cod-liver oil tablets. He had never made

any tests as regards the absence of vitamin D. Messrs. Boots received certain essences from McCoy's and these were subsequently made up in tablet form from the formula of the McCoy firm who supplied the two main ingredients. That was all his firm had to do with their manufacture. The fact that the extract from the tablets did not give the colour test for vitamin A he attributed to the presence of certain other ingredients. He had not examined the particular sample submitted by the prosecution.

Counsel for the defence submitted that in the absence of any definite standard laid down by the British Pharmacopœia the prosecution had failed to show that what was sold was not of the nature, substance, and quality of the article demanded. He further submitted that his clients, not being concerned with the manufacture, were not prepared with any evidence regarding the animal tests. It was in fact a proprietary article, and the defendants were entitled to a dismissal. The magistrate inflicted a fine of £30 and 75 guineas costs. Leave was given to the defendants to appeal.

THE IRISH MILK-SUPPLY.

(FROM OUR OWN CORRESPONDENT.)

THE report of the Inter-Departmental Committee to Advise as to the Cleanliness and Wholesomeness of the Milk-supply—of which various more or less accurate forecasts had previously appeared—was published last week. The Committee was appointed in 1926 by the Minister for Local Government and Public Health. Among the members were four medical men—namely, Mr. T. Hennessy, T.D.; Mr. E. F. Stephenson, Chief Medical Adviser to the Department of Local Government and Public Health; Sir W. J. Thompson, formerly Registrar-General for Ireland; and Mr. M. J. Russell, Medical Officer of Health for the City of Dublin. Mr. P. F. Dolan, M.R.C.V.S., Chief Veterinary Inspector for the Dublin Corporation, was also a member. The Committee give a summary of the laws and regulations by which control of the production and sale of milk is carried on at present. They also survey the condition of the milk as it reaches the consumer. The opinion is expressed that the incidence of tuberculosis is comparatively low in Irish stocks, and that many of the small herds are free. The evidence quoted on this point hardly supports the conclusion. Of 204 samples of milk from suspected animals examined at the Veterinary Research Laboratory 9·31 per cent. were found positive. Again, 23·69 per cent. of the cows slaughtered at the Dublin Corporation abattoir in 1926 were found to be tuberculous; of the bullocks 6·52 per cent. were tuberculous, and of the heifers 5·59 per cent. It is estimated that there are at least 3000 animals giving tuberculous milk at present in the Irish Free State. In order to deal with this problem the Committee recommend that all cows should be inspected at least twice a year by a veterinary inspector. It is recognised that the complete eradication of tuberculosis within a short time is impracticable, on account of the cost and the shortage of milk that would result.

The "Accredited Herd System."

The Committee recommend the system of dealing with tuberculosis known as the "accredited herd system" as far as finances permit. Under this system stock-owners would apply to the Government to have their herds freed from tuberculosis, and would undertake to carry out directions in regard to housing, cleansing, disinfection, and purchase of new animals. The tuberculin test would be applied, and reactors removed and slaughtered, part compensation being paid. The herd should be periodically re-tested and reactors, if any, slaughtered. The Committee recommend that the compensation to be paid should be up to two-thirds of the market value of the animals slaughtered. The Committ also recommend a general improvement in existi cowsheds as regards light and ventilation, and more generous feeding of live-stock from bir onwards. The manufacture of tuberculin shou be controlled. The milk of cows suffering from a of the following conditions should not be used human food: acute or chronic mastitis, actinomyco of the udder, suppurative condition of the udd any tuberculous condition of the uterus, any sep condition of the uterus, retained placenta, any oth condition or affection of the cow, udder, or tea likely to convey disease. The Committee quo an interesting bit of evidence to support the view now coming to be widely held—that the bovi bacillus is not, as was held a few years ago, t main cause of non-pulmonary tuberculosis. A hi incidence of non-pulmonary tuberculosis in t Virginia District of County Cavan in 1926 attract attention, and the circumstances were examin with particular relation to the milk-supply. It w found that most of the cases occurred among childr who only drank goats' milk. The milk from eig cows supplying the remaining cases was examin bacteriologically with negative results, and no of the cows showed clinical evidence of tuberculos

Milk-borne Infections.

The Committee pass rather hastily over t question of milk-borne infections other than tub culosis. Some small outbreaks of milk-borne ente occurred in recent years, but were easily checke It is remarked that some medical witnesses we disposed to attribute the high death-rate fro diarrhœa and enteritis in children to contaminat milk, but the Committee think that, in Dublin any rate, other causes such as poverty, overcrowdin bad housing, and defective sanitary conditions ha to be considered. Attention is drawn to many wa in which milk becomes avoidably contaminat during production and transit to consumer, a simple remedies are suggested. Some urban autho ties have made a case for the right of access f purposes of inspection to sources of milk-supp situate outside their own administrative areas, much of the milk consumed in the towns come fro distant sources. The Committee see, howeve the possibility of a confused and uncoördinat multiplicity of inspection if such rights were grante It is hoped that the appointment of county medic officers of health will lead to adequate control.

The Committee received evidence to the effe that in some areas the children of the very po suffered from an insufficiency of milk. In the opini of one competent and experienced witness insu ciency of milk rather than its quality was the cau of ill-health among the poor children of Dublin.

Grading of Milk.

The Committee recommend the adoption in t Irish Free State of a system of grading of milk; a it is considered that two grades would meet t requirements of the country. These grades ar "Grade A—Tuberculin Tested," and "Grade A Milk of the latter grade should be bottled bef distribution; the herd should be submitted veterinary examination every three months; t bacterial count should not exceed 200,000 organis per c.cm., and there should be no coliform organis in 0·01 c.cm. This grade should be controlled a certified by the local authority. The higher grade "Grade A—Tuberculin Tested," should be from tuberculin-tested herd, and the count should not more than 100,000 per c.cm., with no coliform orga isms in 0·1 c.cm. The grade should be certified the Department of Local Government and Pub Health.

Among minor recommendations are that all m vendors should be licensed, that bottling of mi should only be done on registered premises, and th the sale of objectionable articles in the same sh as milk should be forbidden.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary Comitia was held on April 2nd, when Sir John Rose Bradford gave the annual presidential address and reviewed the work of the College. The number of Fellows, he said, was now 385 and of Members 916. He reported that portraits of Sir James Hope and Sir Percy Bassett-Smith had been received as gifts to the College, and gave an account of the life and works of the following Fellows who had died during the year: Ernest Henry Starling, Henry Cook, Sir Horatio Bryan Donkin, Charles Wilberforce Daniels, William Joseph Tyson, Amand Jules McConnel Routh, Alexander Blackhall Morison, Sir Percy William Bassett-Smith, Sir Dyce Duckworth, Sir Dawson Williams, Sir David Ferrier, Hugh James Moore Playfair, and Henry Lawrence McKisack.

Sir John Rose Bradford was re-elected President for the ensuing year.—The resignation of Sir Wilmot Herringham as representative of the College on the Senate of the University of London was accepted with much regret. It was decided not to fill the vacancy as the new Senate would shortly be appointed and the College would not be represented on it.—The President was appointed as delegate to the Commemoration of Harvey's Discovery by the Academy of Medicine in Paris.—Mr. V. R. J. De Boissière was declared to be no longer a Licentiate of the College.

The Diploma in Tropical Medicine and Hygiene was granted to the following 44 candidates from the London School of Hygiene and Tropical Medicine:—

C. R. Amies, Mary N. Andrews, R. E. Barrett, A. Bearblock, S. Bergsma, A. Dunlop, H. Fairbairn, Elisabeth Farra, H. A. Fawcett, M. M. Fikri, O. M. Francis, W. E. Giblin, H. K. Giffen, H. H. Gilbert, J. C. P. Grey, Alma B. Hardy, Eva Ho Tung, W. A. M. Jack, Dila Ram Jandial, B. M. Johns, R. S. Johnston, E. B. Jones, Margaret E. Lovett, Margaret M. McDowall, Amin Abd El Kaksood Magraby, Ram Chand Mahajan, M. V. Merchant, J. C. Milne, Jehangir Hormusji Oonvala, Thaliakattu Parukutti Ammal, J. R. Pierre, E. W. Reece, J. D. Reynolds, Enid A. Roberson, G. I. Shaw, T. A. Sherwin, G. A. Sloan, Hilda M. Smith, Abd El Mohsen Soliman, Grace M. L. Summerhayes, V. E. Whitman, N. J. Willans, C. H. Williams, and H. M. Willoughby.

UNIVERSITY OF DURHAM: FACULTY OF MEDICINE.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S. DEGREES.

Pathology, Pharmacology, Public Health, &c.—*A. R. D. Pattison, †J. C. Arthur, †Abe Franklin, Sydney Adler, W. F. Cross, Kenneth Daniels, Andrew Davis, S. M. Garstein, C. M. Gillis, Katherine M. Girling, C. E. Goldberg, H. W. T. Hall, H. U. G. Harrison, J. G. Lawson, J. A. Lennox, D. C. Livingston, John Maddison, William Mair, J. H. Pool, J. K. H. Scott, J. W. M. Stevenson, J. B. Tilley, Howard Willcox, and Joseph Wolfe.

* First-class honours. † Second-class honours.

UROLOGICAL CONGRESS IN BERLIN.—A conference will be held of the Deutsche Gesellschaft für Urologie from Sept. 27th to 29th, 1928, at the Langenbeck-Virchow Haus, Berlin. The chief topics to be discussed are the pathology and treatment of malformation of the kidneys and ureters, and strictures of the urethra. Other subjects will include urology as a clinical specialty, hypertrophy of the prostate and diverticula of the bladder, and chronic non-specific ulcers of the bladder. The fiftieth anniversary of the discovery of the cystoscope will be celebrated at the opening session, when the work of Max Nitze will be recalled with due honour. Further particulars will be published later. Those who wish to take part in the conference are asked to communicate before July 15th with Dr. Arthur Lewin, Tauentzienstr. 13, Berlin W. 50.

MEDICAL CONFERENCE IN BRUSSELS.—The eighth session of the Journées Médicales will be held from April 21st to 25th in Brussels. Among the many foreigners giving communications are Eugène Gley and M.-P. Weil, of Paris, the former on the relations between the diverse activities of pluriglandular organs, and the latter on rheumatism at the menopause. Jean van der Hoeve (Leiden) will discuss affections of the eye in relation to general medicine, and L. M. Pautrier (Strasbourg) will speak on some aspects of epithelial cancer. Belgian speakers include Pierre Nolf and Jules Duesberg (Liège), Fernand L'Hollander (Louvain), Albert Dustin and Ernest Renause (Brussels), and I. Gunzburg and V. Possemiers (Antwerp). Operation theatres at various hospitals will be open to members of the conference and an exhibition and many social functions will be held. Further particulars and a detailed programme may be obtained from the general secretary, Dr. R. Beckers, 62 rue Froissart, Brussels.

UNIVERSITY OF OXFORD.—The electors have awarded the George Herbert Hunt Travelling Scholarship for 1928 to Mr. Thomas Holmes Sellors, B.M., who is at present casualty surgical officer at the Middlesex Hospital.

TERRITORIAL ARMY MEDICAL ASSOCIATION.—A reunion dinner open to all past and present Territorial medical officers, including à la suite officers, will take place under the auspices of this association on May 11th, at 7.30 P.M., at the Connaught Rooms, Great Queen-street, London, W.C., Major-General Sir Richard Luce, M.P., in the chair. For tickets apply to the Secretary at 36, Russell-square, W.C. 1.

A POST-GRADUATE course on tuberculosis will be held from May 21st to 26th at St. Blasien (Schwarzwald). Among others Profs. Aschoff, Eppinger, Küpferle, and Noeggerath, of Freiburg, will give lectures and Dr. A. Bacmeister, of St. Blasien, will deal with various points of interest, notably the management of tuberculosis by the practitioner and radiotherapy in tuberculosis. Further particulars may be had from Dr. Bacmeister.

TRANSFERENCE OF MANCHESTER TUBERCULOSIS DISPENSARY.—It is proposed to remove the Manchester Tuberculosis Dispensary from Hardman-street to the corner of Denmark-road and Oxford-road. The reasons given by the Public Health Committee are that the noise of traffic and other activities in the immediate neighbourhood is so great that it is impossible to examine the chests of patients with reasonable certainty of correct diagnosis other than at periods of diminished noise, and that the neighbourhood is permeated with exhaust fumes from motor vehicles. The cost of the new buildings, with their furniture and fittings, is estimated at £24,000, whereas the old premises are not expected to realise more than £4700.

THE LATE DR. I. A. DAVIDSON.—The death occurred on March 28th as the result of a street accident of Isaac Alexander Davidson, M.D., D.P.H., who was a graduate of the old Royal University of Ireland, and received his medical education in Queen's College, Belfast, and at Vienna. He was honorary surgeon to the Benn Ulster Eye, Ear, and Throat Hospital, ophthalmic surgeon to the Ulster Hospital for Women and Children, and ophthalmic specialist to the Belfast Educational Authority and the Ulster Brigade. He served in the war as captain in the Royal Army Medical Corps, and had duty in Belfast, Liverpool, and Seaforth. Dr. Davidson's personality was genial and attractive, whilst his professional ability was considerable. His early and unexpected death will be greatly deplored.

DONATIONS AND BEQUESTS.—Mr. Thomas Houldsworth Greenall, of Chorley, Lancs, left £5000 to the Chorley Hospital, and £1000 to the Chorley Nursing Association.—Sir Frederick Wise, J.P., D.L., M.P., of Holwell Court, Hatfield, Herts, left £500 to the Ilford Emergency Hospital and £500 for the benefit of poor persons in Ilford.—Mrs. Sarah Bunting, of Colwyn Bay, left £2000 to the Oldham Royal Infirmary to endow two beds to be known as the "John and Sarah Bunting Beds."—Mr. Ernest Shaw Redman, of Well Royd, Halifax, left £1000 to the Halifax Society for the Blind, £1000 to the District Nurses' Association, Halifax, £1000 to the Tradesmen's Benevolent Institution, £500 to Dr. Barnardo's Homes, and £500 to St. Dunstan's Hostel for the Blind.—Mr. William Dyson, of Pontefract, left the residue of his property, amounting to over £5000, "to the treasurer for the time being of Clayton Hospital and Wakefield General Dispensary, for the general purposes of the said institution."—Baron Glanusk, C.B., D.S.O., of Brecon, left £2000 to the Crickhowell Memorial Hospital and £1000 to the Brecon County Hospital.—Mr. William Thomas Smart, of East Haddon, Northants, left £1000 to King's College Hospital, London, to endow a "Harriet Smart Bed," and £1000 to Southampton General Hospital for a bed for parishioners of Hanslope.—The Ancient Order of Froth Blowers has set aside £1000 for the endowment of two cots at Guy's Hospital. At a cost of £500 each, a cot is to be endowed at each of the following institutions: Royal Alexandra Hospital for Sick Children, Brighton; Queen Mary's Hospital for the East End; Charing Cross Hospital; the Prince of Wales's General Hospital, Tottenham; and the British Hospital for Mothers and Babies, Woolwich.—Mr. Ralph Lees, of Hollinwood and Oldham, engineer, left £2500 to the Oldham Royal Infirmary to endow two "Ralph Lees" beds, £1000 each to the Manchester Royal Infirmary, the St. Mary's Group of Hospitals, Manchester; the Cancer Hospital, Manchester; the Oldham Bluecoat School, St. Dunstan's Hostel for Blinded Sailors and Soldiers, Dr. Barnardo's Home, the Cancer Hospital, London; and "The Children's Hospital, London"; and £500 each to St. Bartholomew's Hospital, London; Ancoats Hospital, Manchester; the Manchester Eye Hospital, the Salford Royal Hospital, Henshaw's Blind Asylum, Manchester; and the Oldham Institute for the Blind.

NOTTINGHAM HOSPITAL SATURDAY FUND.—Last year this Fund collected £27,739, of which £25,297 was allotted to the General Hospital.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL.—This hospital has moved to the new building, Broad-street, High Holborn, W.C.2, and was open to patients last Tuesday (telephone, Regent 1457/8).

GENERAL LYING-IN HOSPITAL.—A matinée will be held at Daly's Theatre, London, on Tuesday, May 22nd, in aid of the extension fund of this hospital. Tickets may be had from the chairman of the appeal committee at the hospital, York-road, Lambeth, S.E. 1.

WOOLWICH WAR MEMORIAL HOSPITAL.—The following additional appointments have been made to the staff of the Woolwich War Memorial Hospital: Obstetric surgeon, Mr. Harold Taylor; senior anæsthetist, Dr. F. P. de Caux; anæsthetists, Dr. Moore Smith and Dr. A. D. Dyson. Dr. William Cowie and Dr. Moore Smith have been elected to the medical committee of the hospital to represent the interests of the practitioners in the Woolwich district.

MEDICAL PROFESSION AND DENTISTRY.—In the debate on the Dentists Bill in the Senate of the Irish Free State a final attempt was made to complete the separation between the medical and dental professions which the Bill already carries far. An amendment was proposed by Sir E. C. Bigger, a medical senator, to remove the control of dental education from the Medical Council to the Dental Board. It was strongly opposed by Mr. McGilligan, the Minister in charge of the Bill, who declared that the amendment was not in accordance with the wishes of either the medical or the dental professions, and was defeated.

BIRMINGHAM HOSPITALS.—The 148th annual report of the Birmingham General Hospital states that delay in finding additional accommodation makes the work of the hospital more and more difficult. Over 3000 urgent cases had to be sent on to other institutions last year and the number of street accidents not only makes serious inroads upon the available beds but adds to the work of special departments, "all of which are trying to meet what is required of them under almost impossible conditions."—At the annual meeting of the Birmingham and Midland Hospital for Skin and Urinary Diseases, Dr. David Rowlands pointed out that when he first knew the hospital venereal disease was responsible for one-quarter of the cases; now it accounted for only 4 per cent. Another speaker said that the majority of the cases now seen are of a kind not yielding readily to treatment.

BRIGHTON HOSPITALS.—The annual meetings of the governors of the hospitals at Brighton were recently brought to a close. A year of remarkable progress was reported at each, but in the majority of cases the financial side gives cause for concern. At the largest of the institutions—the Royal Sussex County Hospital—the casualty cases during 1927 rose from 4914 to 6304, while the total number of cases seen in the casualty department increased from 7852 in 1926 to 9616. The great increase in casualties was described as appalling, and arising in the main as they did from motor traffic, the question arose whether hospitals should not be entitled to compensation for treatment as a matter of routine, and not merely as an act of grace, from either the insurance companies or the Road Fund. The governors considered that some common action should be taken.—The general fund of the Royal Alexandra Hospital for Sick Children was overdrawn at the end of 1927 by £2400, but the governors hoped to see the sum liquidated this year in connexion with the diamond jubilee of the institution. There was also the serious additional financial burden arising from the operation of the new rating assessment under the Rating and Valuation Act. Hitherto the hospital had been called upon to pay rates amounting to about £15 per annum; the new figure was nearly £600. The new wing which was being erected as a memorial to Queen Alexandra would, it was stated, bring the number of beds to 100.—The Sussex Maternity and Women's Hospital recorded the opening of a home for nurses towards the capital expenditure of which the Minister of Health, on being appealed to, had made a grant of £40 for 20 years.—The Sussex Throat and Ear Hospital has entered upon its jubilee year. Only £2000 has been raised of the £6000 required for the contemplated extension scheme, and until that sum is doubled the governors cannot see their way to proceed.—The Sussex Eye Hospital is to be modernised; it has been decided to spend £10,000 in bringing the old premises up to date.—The new wing opened at the New Sussex Hospital in Windlesham-gardens, Brighton, will increase the number of in-patient beds from 30 to 50, and provide improved accommodation for the staff. The hospital is one of four only in the kingdom staffed entirely by women—the porter is the only man.

DONCASTER INFIRMARY EXTENSION.—The committee have decided to begin building a unit of 120 beds to cost £120,000, and to be known as the Queen Alexandra Memorial Wards, as the first wing of their new £300,000 hospital.

WORTHING HOSPITAL.—Nearly £20,000 has recently been spent on extension of this hospital, and it is hoped that a new women's ward and X ray department will be opened next year to celebrate the centenary. Last year's working was satisfactory, the finances showing a small credit balance.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, April 17th.—5.30 P.M., GENERAL MEETING of FELLOWS. Ballot for election to the Fellowship.

THURSDAY.—8 P.M., NEUROLOGY. Clinical Meeting at West End Hospital for Diseases of the Nervous System, Out-patients' Department, Welbeck-street, W.

FRIDAY.—8 P.M., OBSTETRICS. Specimens: Mr. C. J. Read: (1) Teratomatous Ovarian Tumour with Torsion of the Pedicle. (2) Columnar Carcinoma of Fundus Uteri with Metaplastic Change to Epithelioma in the Lower Part of the Growth. Papers: Mr. R. J. Paramore: Eclampsia and its Treatment: An Experience with Spinal Anæsthesia in One Case. Prof. W. Blair Bell: The Malignant Functions of the Chorionic Epithelium.

HARVEIAN SOCIETY OF LONDON.

THURSDAY, April 19th.—8.30 P.M. (in the Paddington Town Hall), Discussion on the Treatment of Ulcerative Colitis from Medical and Surgical Points of View, to be opened by Dr. H. Letheby Tidy, followed by Dr. L. E. C. Norbury, Dr. E. Bellingham Smith, and Mr. C. P. G. Wakeley.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FRIDAY, April 20th.—2.30 P.M. (in the Guildhall, Bath): Discussion on Causes of the Decline in Tuberculous Mortality, to be opened by Sir Robert Philip, Dr. W. M. Willoughby, Prof. E. L. Collis, and Prof. Major Greenwood.

LONDON CLINICAL SOCIETY.

THURSDAY, April 19th.—8.30 P.M., Infections of the Tonsils and their Sequelæ.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.

WEDNESDAY, April 18th.—4.30 P.M., Dr. H. Oddy: Clinical Meeting.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 20th.—4 P.M., Mr. Harold Kisch: Multiple Nasal Sinusitis.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 17th.—4.15 P.M., Dr. W. F. Shaw: Fallacies of Forceps.

FRIDAY.—4.15 P.M., Dr. T. H. Oliver: Demonstration of Medical Cases.

Appointments.

COOK, EVA D., M.B., B.S., has been appointed House Surgeon to the New Sussex Hospital for Women and Children, Brighton.

HUNT, ELIZABETH, M.D., Ch.B. Liverp., Honorary Senior Medical Officer, Liverpool Hospital for Cancer and Skin Diseases.

PARRY, R. H., M.B., B.S. Lond., D.P.H., Medical Officer of Health for Bristol.

Westminster Hospital: WAINWRIGHT, J. H., L.R.C.P. Lond., M.R.C.S., and MCGRATH, A. M., L.R.C.P. Lond., M.R.C.S., Resident House Physicians; MORGAN, T. W., L.R.C.P. Lond., M.R.C.S., Resident House Surgeon; GREENE, C. J., L.R.C.P. Lond., M.R.C.S., Resident Obstetric Assistant.

Certifying Surgeons under the Factory and Workshop Acts: HOWIE, T. W., M.B., Ch.B. Glasg. (Rothesay); TUNIS, W. L., M.D., Ch.B. St. And., D.P.H. (Newburgh, Fife); and WALTER, A. G., L.R.C.P. Lond., M.R.C.S. (Wallingford).

Vacancies.

For further information refer to the advertisement columns.

Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College.—Second Asst. Res. M.O. £300.

Barrow-in-Furness, North Lonsdale Hospital.—H.S. £130.

Beit Memorial Fellowships for Medical Research, 35, Clarges-street, W.—Junior Fellows. £400.

Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.

Birmingham, Dudley-road Hospital.—H.S. At rate of £200.

Birmingham, Highbury and Uffculme Hospitals.—Jun. Res. M.O. £300.

Bolingbroke Hospital, Wandsworth Common, S.W.—H.P. £120. Also Out-patients' Officer to Ophth. Dept. £65.

Bradford Royal Infirmary.—Two H.S.'s and H.P. Each £150.

Bury and District Joint Hospital Board.—Res. Asst. to Med. Supt. £400.

Cambridge, Addenbrooke's Hospital.—H.S. At rate of £130.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Chester Royal Infirmary.—Hon. Asst. Anæsthetist.

City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—M.O. At rate of £100.

Dreadnought Hospital, Greenwich.—Anæsthetist. 50 guineas. Also Surgeon in charge of Out-patients.

East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.S. and Whole-time Cas. O. Each at rate of £125.

Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.

Harrington General Dispensary, Holborn-circus, E.C.—Hon. Phys.

Glasgow Royal Infirmary.—Deputy Med. Supt. and Sen. Med. Resident. £200.

Gloucestershire Royal Infirmary.—Asst. H.S. At rate of £120.

Guildford Union Institution, Warren-road.—Res. M.O. £500.

Hospital for Epilepsy and Paralysis, Maida Vale, W.—Res. M.O. and H.P. At rate of £150 and £100 respectively.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.

Huddersfield Royal Infirmary.—H.S. £150.

Laboratories of Pathology and Public Health, 6, Harley-street, W.—Asst. Pathologist. £500.

Leeds, St. James's Hospital.—H.P. and S. £200.

Liverpool Eye and Ear Infirmary.—Third Hon. Anæsthetist.

London Homœopathic Hospital, Great Ormond-street, W.C.—Phys.

London Hospital, E.—First Asst. and Reg. to one of the five Surg. Firms. £300.

Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300. Also Dickinson Surgery Scholarship. £75. Jun. H.S. £100.

Nottingham General Dispensary.—Res. Surg. £250.

Portsmouth, St. Mary's Infirmary.—First Asst. Res. M.O. £350.

Redruth, W. Cornwall Miners' and Women's Hosp.—Rsdiographer.

Rochester, St. Bartholomew's Hospital.—Third Res. M.O. At rate of £175.

Rotherham Hospital.—H.P. £180.

Royal Chest Hospital, City-road, E.C.—Res. M.O. At rate of £150.

Royal College of Surgeons of England.—Examiners.

Royal Naval Medical Service.—Surg. Lieutenants. £453.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.S. At rate of £100.

St. John's Hospital for Diseases of Skin, Leicester-square, W.C.—Hon. Asst. Phys.

Samaritan Free Hospital for Women, Marylebone-road, N.W.—Registrar. £100.

Sheffield Royal Hospital.—Res. Anæsthetist. At rate of £80.

West End Hospital for Nervous Diseases, 73, Welbeck-street, W.—Registrar. £200.

Windsor, King Edward VII. Hosp.—Jun. H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Finedon (Northampton), Wivenhoe (Essex), and Accrington (Lancashire).

The Home Secretary gives notice that Mr. M. W. B. Bulman, M.B., F.R.C.S., has resigned his post as one of the Medical Referees under the Workmen's Compensation Act, 1925, for the Districts of the Aylsham, Downham Market, East Dereham, Fakenham, Holt, King's Lynn, North Walsham, Norwich, Swaffam, Thetford, and Wymondham County Courts (Circuit No. 32). It is proposed to appoint a surgeon to fill the vacancy. Applications from surgeons should be addressed to the Private Secretary, Home Office, London, S.W. 1, and should reach him not later than April 25th, 1928.

Births, Marriages, and Deaths.

BIRTHS.

HATTERSLEY.—On March 31st, at Aldershot, the wife of Major S. M. Hattersley, R.A.M.C., of a son.

STUBBS.—On March 30th, the wife of Major J. W. C. Stubbs, R.A.M.C., of a son.

WELLS.—On April 2nd, at Belvedere House, Danbury, Chelmsford, the wife of J. Pascoe Wells, M.B., of a daughter.

DEATHS.

MACLEAN.—On April 2nd, at Eastbourne, Kenneth Maclean F.R.C.S., L.R.C.P., late of Holloway, N.

PATERSON.—On April 5th, Neil Munro Paterson, L.D.S., D.M.D., aged 27 years.

TRIBE.—On March 31st, at a nursing home in Newport, Alfred Gladstone Tribe, M.R.C.S.,L.R.C.P., of Usk, Monmouthshire.

WIGHAM.—On April 5th, at Dean Park-road, Bournemouth, Dr. John Harper Wigham, aged 65.

N.B.—*A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.*

Notes, Comments, and Abstracts.

A CASE OF PELLAGRA.

Dr. Burr Ferguson, of the United States public health service, who formerly worked for some time in the municipal laboratory at Southampton, narrates in the February issue of *Clinical Medicine and Surgery* an interesting case of the successful administration of succinimide of mercury, where the patient appeared at first inspection to be dying of pellagra. She had the typical symmetrical lesions on hands and forearms, and mental and nervous symptoms were pronounced. The physical condition had improved in a nursing home, but a mental consultant had given it as his opinion that such days as remained to the patient would have to be spent in the lunatic asylum. An injection of 0·05 g. of succinimide of mercury was given by Dr. Ferguson, who reports that thereupon symptoms were arrested and convalescence ensued.

NEW PREPARATIONS.

Calcium "Sandoz."—This salt, which is prepared by the Sandoz Chemical Works, 5, Wigmore-street, W., is a combination of calcium and glucose, for which it is claimed that whether given by the mouth or by intramuscular or intravenous injection good results can be obtained in the many conditions where calcium is indicated: the manufacturers mention a large range of these indications, some of which will appear more clear to medical practitioners than others. The powder is supplied in boxes of 2, 4, and 16 oz., and it is recommended that it should be taken between meals in tea, coffee, milk, or fruit juice sweetened according to preference, the dose for adults being 1 to 2 teaspoonfuls three times daily, half that dose sufficing for children. For injection the salt is supplied in boxes of 1, 5, and 20 ampoules, each of which contains 10 c.cm. of a 10 per cent. sterile solution of gluconate of calcium, and one ampoule is recommended for injection every two or three days. A note in the *Deutsche Med. Wochenschrift* suggests that Calcium Sandoz has proved an effective remedy in asthma and other conditions of an asthmatic character.

Hydnocarpus Wightiana Oil.—We have received a specimen of this oil prepared by the Ernakulam Trading Co., Ltd., Ernakulam, S. India. It is employed in the treatment of leprosy as a substitute for chaulmoogra oil, from which it differs in colour, odour, and specific gravity, but the preparation receives a practical testimonial from Dr. Robert G. Cochrane, who was responsible for the final report on medical work for the mission to lepers in India, and who has found the oil "one of the cheapest and best drugs for the treatment of leprosy."

Tessol is prepared at the laboratories of Messrs. E. T. Pearson and Co., Ltd., 35, Gordon-square, London, and is a combination of essential oils designed for use in gastro-intestinal disorders. As is well known (THE LANCET, 1926, ii., 721), preparations of the essential oils have been employed with success in the pre-collapse stage in cholera, so that the manufacturers have support for their claims that they are providing a scientific remedy of proved use in certain conditions. The formula is not given, but a combination of such well-known drugs as ol. anisi, ol. cajaput, and ol. juniper has been found in the evacuation stage of cholera to act as a carminative, stimulant, and astringent, and the same properties are claimed for tessol. The correct dose for children and adults is suggested by the manufacturers, who state that it contains no opiates.

MEDICAL EXPERIENCE OF A BIRTH CONTROL CLINIC.

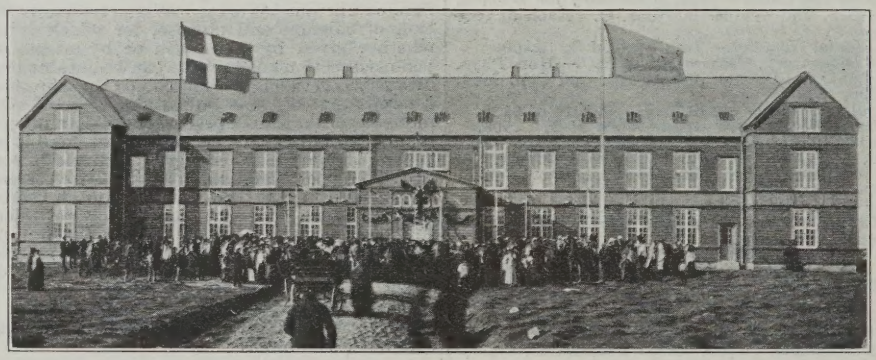
IN our issue of Dec. 31st, 1927 (p. 1400), some comments were made upon the medical aspects of birth control which arose from the annual report of the Walworth centre of the Society for the Provision of Birth Control Clinics. In the third annual report of the North Kensington branch of this Society [1] these medical aspects have been fully dealt with in a supplement written especially for medical readers. It is here argued that the only circumstances which justify the view that the practice of contraception causes physical harm are those created by an absence of medical supervision. In the first place there is nothing to prevent a woman from buying an ill-fitting pessary in a shop. Experience has shown that certain occlusive pessaries—particularly the so-called Dutch pessaries—require careful fitting to be effective. There are certain circumstances—notably when there is a profuse cervical discharge—when the use of an occlusive pessary is contraindicated. In the absence of medical supervision there is nothing to prevent such a condition being overlooked. In the second place it

[1] Obtainable from the Secretary, 12, Telford-road, Ladbroke-grove, London, W.

is always open to the couple desiring to limit their family to practise coitus interruptus, the harmfulness of which is fairly generally acknowledged. Statistics now in preparation indicate that this method of birth control is very widespread. It is further claimed in this supplement that the activities of the doctors at these clinics, by whom a full pelvic examination is made of each case, result in the detection of early disease rather than in the causation of disease. A list of cases in which genital disease was discovered in the course of the routine pelvic examination is given. The women were referred to a hospital. Lastly, the attitude of the Ministry of Health is outlined and stress is laid on the fact that any doctor is at liberty to refer a woman patient at any time for advice to a birth control centre. This supplement should be of value to all interested in the medical aspects of birth control.

LEPROSY IN ICELAND.

THE work of Prof. Saemundur Bjarnhjethinsson in the cure and eradication of leprosy is probably less well known than it deserves to be. It was in 1898 that coördinated methods were definitely adopted in Iceland for combating the disease. The former seat of the Bishop at Laugarnes was acquired and, having been converted into a hospital, was presented to Iceland by the Oddfellows of Denmark. At that time there were 250 cases in the island, whereas to-day the total is 44; thus in 30 years the number has been reduced by a clear four-fifths. Since the foundation of the hospital none of the workers there has contracted the disease. The risk of infection is regarded as slight, and the law does not compel the incarceration of all patients. Ten lepers on the island, while enjoying comparative freedom, are now almost cured; the remaining 34, more serious cases, are confined to the hospital, of which we publish a photograph. The curative methods adopted may be summarised under the headings: cleanliness, nourishing food, chaulmoogra oil and other esters, and a considerable proportion of the patients are said to be progressing very favourably. Prof. Bjarnhjethinsson's hope, which appears in no way unreasonable, is that the country will be entirely free from the disease in about 40 years. He states that the only Government which has deemed it worth while to make inquiry concerning leprosy in Iceland has, up to the present, been that of the Philippines.



Hospital for lepers in Iceland.

A MEDICAL FISHERMAN.

Dr. J. Brunton Blaikie, who writes pleasantly and modestly of his fishing experiences in Great Britain and in Norway,[1] will find appreciative readers among those many medical men who share his hobby. He gives enough technical details of his methods and preferences to help the novice, while those who are themselves experts will enjoy the racy accounts of experiences common to most fishermen. Dr. Blaikie recommends fishing as the sport most certain to give rest and refreshment; but adds that one who fishes as he would take a medicine is hardly less despicable than one who plays bridge in order to make money. The fact that many of his companions are well known in the profession adds to the interest of his book.

A USEFUL POCKET FLASK.

Messrs. J. and F. Martell have placed on the market for the convenience of travellers a neat little flask measuring approximately $4\frac{1}{2} \times 2\frac{1}{2} \times 1$ inches, and shaped to fit the pocket. The "cork" consists of a patent cap which can be instantly removed or replaced and which securely seals the mouth of the flask, while an aluminium drinking-cup slides over the lower half of the container, thus affording protection against breakage. The flasks contain the Three Star Brandy distilled by the firm and they can be obtained at most licensed houses as well as on channel steamers and air liners.

[1] I Go a-Fishing, by J. Brunton Blaikie, M.D. London: Edward Arnold. 1928. Pp. 224. 10*s*. 6*d*.

A SYMPATHETIC PSYCHONEUROSIS.

A LAY correspondent inquires whether we know of other cases of husbands who suffer in sympathy with their wives at the monthly periods. His own experience is as follows:—

I am 37 years old, was married in 1923, but my present symptoms did not begin until I returned from the war. Now at each of my wife's recurring monthly flows I have aches in the back, head, and legs, especially the last, a feeling as if I were in the first stage of a bad cold, but no cold develops (it was, by the way, this non-sequence which first pointed me to the actual cause). I do not keep count of the months, but I am aware, without my wife informing me, when her period comes round, and, were we a thousand miles apart, I should know just the same.

The case is evidently a psychoneurosis, and, if rare, is at all events not without precedent. We know of a psychical homosexual who claimed to suffer the throes of menstruation. Another man who had been upset at the birth of his first and only child, and dreaded his wife becoming pregnant again, had hysterical fits; on coming round from one of these he declared that he had gone through the pains of childbirth. Related to this subject is the well-known custom of the *couvade*, in which, in certain tribes the husband goes to bed when a child is born to his wife, and is treated as he had done the whole thing himself. There is a belief in some parts of this country that when a wife is pregnant the husband is subject to toothache. Readers will recall a recent sketch in *Punch* of a young husband in obvious distress being reassured by the family accoucheur in the following words: *Young husband:* It will kill me. *Doctor:* I've brought thousands of babies into the world and never lost a father yet.

FEES FOR THE EXAMINATION OF CASUALS.

"Acacia" writes: Circular 880 of the Ministry of Health has extended to June 30th the arrangements for the detection of small-pox among casuals, and it becomes now more than ever necessary to ascertain what remuneration the different boards of guardians will be paying, and to try to get a uniform scale. "Vagrant's" suggestion (in your issue of March 17th) of 1*s*. per casual inspected seems fair. I hope some official lead will be given, otherwise one's claims may be shelved.

SUPERSTITION IN SUSSEX.

To the Editor of THE LANCET.

SIR,—The following is pretty good for enlightened England in this year of grace 1928: We have a cook-general, a Sussex woman, aged 40, who has been a cook for many years. Yesterday my wife asked her to separate the giblets and liver from a trussed fowl before roasting. She hesitated and the request being repeated, gaped and said, "Oh, please 'm I couldn't mum! Not to-day mum." When asked "What on earth do you mean?" she explained, "Oh, please 'm they say you mustn't touch raw meat when you're—*you know mum*"! I am familiar with the dairywoman's tradition of the noxious effects of menstruation on milk and cream, and with Moses' instructions in Leviticus, but this selection of meat for taboo is new to me.

I am, Sir, yours faithfully,

Emsworth, Hants, March 27th. H. CAMERON KIDD.

*** We recorded many years ago the belief of country women in Wessex and Worcestershire that they ought not when menstruating, to handle raw meat for fear of spoiling it. —ED. L.

THE full name of the new antiseptic solution put on the market by the British Drug Houses, Ltd., is Caprokol Antiseptic Solution S.T. 37.

IN the advertisement for Ostelin that appeared in our last issue it should have been stated that the figures at the top of each column of the chart represent units of vitamin A contained in 1 gramme of the substance tested.

An Address

[ABRIDGED]

ON

THE MEDICAL PERSPECTIVE OF MULTIPLE EXTRACTIONS

AND OTHER MAJOR DENTAL OPERATIONS.

Delivered to Post-graduates at the Royal Dental Hospital on March 28th, 1928,

BY HARVEY HILLIARD, C.B.E., M.D. ZÜRICH, M.R.C.S. ENG., D.P.H.,

SENIOR ANÆSTHETIST TO THE HOSPITAL.

THE extraction of teeth is so painful, and is sometimes accompanied by so much shock, that before the discovery of anæsthesia it was never resorted to except for the relief of pain—or as a means of raising revenue, if the history books describing the habits of the earliest English kings are to be believed. In consequence, oral sepsis was rampant, the general health suffered, people did not live so long, and the death-rate was much higher than it is now.

Even after the introduction of nitrous oxide gas, for many years no one would have a tooth extracted unless it were aching, or visit the dentist except for the relief of pain. This was because, in the early days, the gas was impure and was administered badly and with very little knowledge of its physiological action and after-effects; it made many people feel so ill that they preferred to have a tooth out without any anæsthetic at all. They avoided visiting the dentist, except for the relief of pain, because it was not then generally known that decaying teeth poison the whole system and undermine the general health. Now we know better; people take more care of their teeth and, I am told, the hygiene of the mouth is taught in the public elementary schools—in America.

Even to-day, however, cases of extreme oral sepsis are an everyday occurrence and extensive operations have to be performed for the removal of teeth too septic to be saved. Unhappily, the present practice, all too commonly, is to perform these severe operations at the dentist's surgery, after which the patient has to take a journey home, shocked, bleeding and nauseated; not only this, but if the operation has not been completed and has to be done "piecemeal" on successive occasions, he is depressed both mentally and physically in anticipation of having to go through the ordeal again. Further, he may suffer symptoms of severe illness, with signs of general toxæmia, as a result of absorbing a large dose of toxin from the sockets of the teeth which have been removed, since these sockets become heavily infected from the teeth which remain.

AN EVIL TRADITION.

Why, then, are these operations usually performed at the dentist's surgery rather than at the patient's own home? It is because of the tradition. But, apart from the "odontophobia," if I may coin a word, or the "dental retention complex" (as the psychoanalysts might say) how has this tradition arisen?

It has become the custom for the patient to visit the dentist, rather than for the dentist to visit the patient, because it used to be very rare for more than one tooth to be removed at a time and the extraction of a single tooth was considered a trivial operation—at least by the dentist! It was more expedient and saved time to proceed in this manner, and there was the advantage of operating in a special dental chair, in a good light, and where all the necessary instruments are at hand. With the introduction of anæsthesia extractions became more extensive, but still the patient had to go to the dentist; because when first introduced the nitrous oxide gas was prepared only at the dentist's house, being stored in gasometers ready for use when required. The introduction of compressed and liquefied nitrous oxide in steel cylinders, thus making it readily portable, should have changed the procedure in the cases in which two or three extractions were necessary, but the tradition had arisen and traditions die hard; also, apparently, it did not occur to anyone that things might be done more comfortably and with less risk for the patient.

More recently still, the nasal method of administering nitrous oxide (introduced by Mr. Frank Coleman and myself in 1898) whereby anæsthesia can be indefinitely prolonged, has led to very extensive operations being performed under nitrous oxide, and on numberless occasions I have been asked thus to administer the gas for complete clearance of the teeth from both upper and the lower jaws and for other long dental operations. Picture what this means to the patient concerned. Consider the wounds made. I have measured many teeth and find that on the average the unerupted portion—that is to say, the portion from the gum margin to the apex, is 13 mm. If, therefore, ten teeth only, including one or two molars, are extracted, the sum of the depths of the sockets will amount to 150 mm., equalling a linear incision about *6 in. long.* But this is reckoning the depths of the sockets only; it does not take into account the superficial area of the whole of each socket, which cannot be less than, say, ¼ sq. in., making a total of approximately 2½ sq. in.

Imagine a skin wound 6 in. long, or more seriously 2½ in. square; imagine it left an open wound or covered with blood-clot, as in the case of the sockets, and assess what the "moral and intellectual damages" apart from the physical damage to the patient would be. Would the patient think of having such a wound made in the surgeon's consulting room and then go home afterwards? Would he not insist rather that the operation should be done in his own house or in a nursing home, so that, if he felt like it, he could immediately thereafter go to bed? Would he not expect every antiseptic precaution to be taken, proper dressings applied, all the ceremonial, all the solicitude of sympathetic friends usually associated with an Operation? Of course he would, and I hope that both surgeon and anæsthetist would be paid accordingly. But no one thinks anything of teeth, and the unfortunate anæsthetist, although he is the specialist who alone has made the operation possible and may have administered the anæsthetic with the greatest skill and with minimal interference with the patient's normal conditions and functions of life, receives but a small fee; because the patient does not realise either the experience or skill required, or the extent of his indebtedness; nor can he imagine what his sensations might otherwise have been. The dental surgeon is partly responsible for this; for some reason, I have not yet been able to discover, instead of putting all the facts before the patient and advising him that the operation is a major one and that it should be performed under ideal conditions, he makes light of the whole business and cannot therefore ask an adequate fee either for himself or for the anæsthetist. If patients were made to realise the truth and were made to understand what such an operation really involves, and if they were given the choice of having the operation done at one sitting in their own homes (or a nursing home) or of having it done piecemeal at the dentist's surgery, I believe they would plump for comfort every time and, moreover, would be willing to pay extra for it.

ABSORPTION OF TOXINS.

I have cited the instance of an ordinary superficial skin wound, but I cannot too strongly emphasise the fact that the wounds involved in the extraction of but ten teeth are far more serious. They are not merely superficial wounds in the gum but extend deeply into the cancellous tissue of the jaw bones. Such

tissue is notoriously very absorbent, and the patient may get a dangerous dose of toxin, because the tooth sockets immediately become filled with infected blood-clot, which is the best culture-medium in the world for pathogenic germs. For this reason many physicians advise, when patients are already debilitated by the absorption of toxins from chronic oral sepsis, or are suffering from some other disease in one or other of its protean forms which result from the absorption, that one or two teeth only be extracted at a time, and that when the patient has got over the direct effects of the extra dose of poison absorbed, the operation should be continued thus piecemeal until completion. They argue that if more than one or two teeth were taken out, the direct after-effects would increase in direct proportion and that the patient might be made more ill in consequence, because the tooth sockets would become heavily infected by the septic teeth remaining. I venture the opinion that this argument is fallacious, for my experience during the last 30 years is that patients suffer much less in every way if major dental operations are conducted in the manner I have suggested than they do when the operations are performed in successive stages. I believe that the sum of the results from the multiple successive doses of auto-intoxication is greater and more debilitating than are the results of the single dose of poison absorbed when the mouth is cleared of all septic material at one operation, because there are no teeth left to infect the sockets. I know of several cases that have suffered severely as the result of several successive extractions of acutely septic teeth with pyorrhœa. I know of one case of death, from pernicious anæmia, following this method of dealing with multiple dental caries; this patient was not suffering from pyorrhœa when the extractions began; he stated that his anæmia only began after the extractions were finished; he was not anæsthetised by me, but he told me that he was made increasingly ill by each successive administration of gas, and he attributed his anæmia to these repeated administrations. It is, of course, impossible to say if this were so, as no blood examinations were made until anæmia had manifested itself; but we do know that nitrous oxide gas does cause temporary blood changes, and it is not unreasonable to argue that if more gas is administered before the blood has had time to recover from the first dose, the more profound is the blood change likely to become and that possibly the organs concerned in blood-making may lose their recuperative power.

Recommendations.

So much for the old practice: what of the new? I submit for your consideration the following suggestions:—

1. That multiple extractions should be treated as one major operation.
2. That the patient should be medically examined before the operation is undertaken, having at the same time an examination of the blood.
3. That the patient should be properly prepared for the operation.
4. That the operation should be performed at the patient's own home or in a nursing home or hospital, so that immediately thereafter the patient can be put to bed and proper care and after-treatment be insured.
5. That a proper period of convalescence should be arranged for and that the patient should be immediately fitted with a temporary denture, so that he can partake of the diet he has found by experience best suited to him, and thus be saved from the risk of being half-starved, with its inherent danger of consecutive disease.

Some amplification of some of these points is necessary.

The *preparation of the patient* may include a course of heart tonics and correction of the low blood pressure usually associated with the condition necessitating these operations. A course of intestinal antiseptics may also be given and possibly ultra-violet irradiation both general and local. It must include suitable diet with a view to preventing subsequent acidosis, irrespective of whether chloroform is to be administered or not, because shock may be a factor in producing this serious sequela of operations.

The *place for operation* is, I consider, of extreme importance. If it is performed at home, not only is the patient saved unnecessary suffering, but we add materially to his comfort and shorten the period of his convalescence and ultimate restoration to health. Many risks inherent in the operation itself, and the risks of subsequent inflammation and general septic infection are obviated.

Convalescence is peculiarly the province of the physician, and its importance I think needs stressing somewhat, for in hospital practice, at least, patients are usually given no advice concerning it, but are allowed immediately to resume, if they can, their ordinary avocations. Generally they are unfit for this, and if they attempt it their convalescence is unduly protracted; they must be inefficient meanwhile, and during the period of debility they incur the risk of developing some general disease.

The importance of the temporary denture can be gauged by considering how much of a hard day's work can be efficiently performed on pap. I will not expatiate on the harmful effects of patients being left edentulous for several months; but I may mention that I have seen many adult patients who have suffered in mind, body and estate from not being able to eat anything but baby food, because they were left with no teeth.

Induction of Anæsthesia.

As I am not an operator, I can refer only to the medical and the anæsthetic aspect of operative technique. I submit that for the attainment of the best results the closest coöperation between doctor and dentist is necessary, before, during, and after the operation. In this connexion it goes without saying that a general anæsthesia must be maintained of sufficient duration for a possibly protracted operation. For this the patient should be properly prepared, since local anæsthesia or regional anæsthesia are inadmissible in these cases. I may here mention that on several occasions I have had to maintain general anæsthesia for over an hour for exceptionally difficult extractions; for instance, the removal of impacted and misplaced unerupted teeth necessitating sawing, drilling or chiselling away the surrounding bone; and more commonly, impacted lower wisdom teeth.

How, then, may such an anæsthesia be obtained? In my experience it is best to give a preliminary hypodermic injection of atropine gr. 1/100—and in certain cases this may be combined with gr. $\frac{1}{8}$ or gr. $\frac{1}{4}$ of morphia—half an hour before the operation. Morphia allays the patient's apprehension and is a great comfort to him; it is a comfort also to the anæsthetist because it inhibits reflex action and enables him to maintain a much lighter plane of anæsthesia than otherwise would be possible. In many cases this preliminary administration of morphia produces a prolonged anodyne effect and relieves the after-pain of the operation. The atropine diminishes the secretion of the salivary glands and of the mucous glands of the respiratory passages and so renders the field of operation more dry: thus the patient's respiration is not embarrassed by the mucus and salivary secretion even if ether be administered. Atropine also lessens the risk of post-operative bronchitis. If a full dose of atropine be administered, it is possible to give ether instead of chloroform throughout a very protracted operation. Atropine diminishes the reflex excitability of the vagus and thereby reduces the risk of reflex inhibition of the heart. Provided that a preliminary hypodermic injection of morphia and atropine can be given, it is possible to keep the patient anæsthetised with nitrous oxide and oxygen administered nasally for very considerable periods. Such an injection cannot, however, be given if the operation is to be performed at the operator's surgery or if the patient has to take a journey home immediately afterwards.

With more serious operations, such as removal of growths of the jaws or removal of the jaw itself, or even the removal of misplaced unerupted teeth and similar operations of a less grave nature, it is usually better to induce anæsthesia with a mixture of chloroform and ether and then continue with chloroform alone, administered by means of a Junker's apparatus through an oral or nasal tube. The posture of the patient is important. He should be recumbent on an operating table, with the left shoulder raised and the head turned slightly to the right, so that blood may drain into the lower cheek and out at an angle of the mouth, without the risk of becoming inhaled or swallowed, with the added danger of asphyxiation on the one hand, or of distressing after-vomiting on the other. With the patient in this position a sponge can be inserted into the mouth, serving the double purpose of absorbing blood and secretions and of acting as a screen, preventing any foreign body reaching the respiratory passages. If, however, the operator prefers to work with the patient in the sitting posture, this may be arranged, provided the anæsthetic is administered in this position from the outset. On very many occasions I have had to administer chloroform in the sitting posture because this posture is preferred by some operators; it certainly has the advantage of diminishing the bleeding, but undoubtedly it is more dangerous when the patient is under chloroform or ether.

Sequelæ of Operation.

The after-effects depend in direct ratio first and most importantly upon the duration of the anæsthesia; secondly, upon the amount of trauma caused in the mouth; and, finally, upon the amount of toxin absorbed.

The first two of these points need no amplification, for the moral they point is obvious—namely, that the patient should not be kept under the influence of the anæsthetic a moment longer than is absolutely necessary, and that the operation should be performed with the least possible damage to the tissues involved. The last depends partly upon the skill of the operator, partly upon the preliminary cleansing of the mouth, and chiefly upon the nature of the operation performed and the degree of cleanliness maintained after its completion. I have seen some operators—notably Mr. W. H. Dolamore, who I believe introduced the method—sew up the lacerated margins of the gums, after careful cleansing of the sockets, to prevent sloughing and to promote rapid healing. This method, in my experience, is followed by most satisfactory results. Others syringe out the cavities immediately after the extractions are complete and continue this antiseptic treatment throughout the convalescence. If these methods are employed, and if the after-care is properly conducted by the physician in charge, the patients suffer the minimal disturbance of the conditions and functions of life and the least possible shock and mental distress; their recoveries are amazingly rapid and the improvement in their general health after the removal of the source of their toxæmia is most gratifying to all concerned.

Mr. Geoffrey Keynes has prepared a "Bibliography of the Works of William Harvey," containing eight collotypes and numerous facsimiles in line. It will be published by the Cambridge University Press, in a limited edition of 300 copies, to celebrate the tercentenary of the publication of "De Motu Cordis."

Donations and Bequests.—Miss H. Knealy has given £3000 to endow a bed in the Royal Free Hospital for women authors and £4000 to endow a bed for journalists of either sex in a private ward to be named the "Knealy" Ward. These gifts are in memory of her brother.—The late Sir Harry Poland, K.C., among other bequests, left £500 to the Dover Hospital, Dover; £500 to the Mayor of Dover for the time being, for distribution amongst such charities in Dover as he, in his absolute discretion, may think fit; and £100 each to a number of medical charities.—Mr. Charles Coxhead, Lindsay, M.I.C.E., of Harley House, Regent's Park, N.W., besides other bequests, left £5000 to the Royal Hospital for Sick Children, Yorkhill, Glasgow, to endow a ward, £100 each to the Glasgow Royal Infirmary, the Western Infirmary, and the Victoria Infirmary, Glasgow.

AURICULAR FLUTTER.*

A STUDY OF FIVE CASES.

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Auricular flutter is closely allied to fibrillation, but is much less frequently encountered. Lewis [1] has shown that auricular flutter is due to a "circus movement" in the auricles—namely, the continuous movement of a contraction wave in a ring of muscle, such as that which surrounds the mouths of the superior and inferior venæ cavæ or the mitral orifice. This revolving wave of contraction governs the movement of the auricles; it is inefficient as compared with the normal auricular systole; there is no starting-point, the wave moves continuously in a circular path, and its crest is separated from its wake by a gap of responsive and temporarily uncontracted muscle. Flutter may occur in paroxysms, appearing and disappearing abruptly, but once established it usually persists for months or years. The usual rate of the flutter circus movement is about 300 per minute. The ventricle can rarely respond to every auricular circus movement and it generally responds to each alternate one—2 : 1 block; the resulting ventricular tachycardia, however, is usually at a rate sufficiently high (generally about 150 per minute) to cause circulatory embarrassment.

In auricular fibrillation the rate of the auricular circus movement is higher, about 450 per minute, and the circus movement is irregular inasmuch as the same path is not followed from cycle to cycle; a single circus movement does exist, but the path changes constantly in its details while following the same general direction. In flutter the gap of responsive muscle between the crest and wake of the circus movement is about 1/5th of the whole circle in which the wave moves; in auricular fibrillation the gap is shorter and the wave of contraction flows through muscle in which more fibres are irresponsive. The close relation between flutter and fibrillation is shown by the fact that the former may pass into the latter under treatment. In flutter or auricular fibrillation, if the refractory period lengthens or the rate of propagation of the wave increases, the gap shortens; if the refractory period shortens or conduction decreases the gap widens. If the former changes are of such magnitude that the gap disappears the crest of the wave overtakes its wake; if, then, the muscle at the wake of the wave remains a little longer in the refractory state, the circus movement comes to an end. When this happens clinically the arrhythmia ceases and the dominant normal sinus rhythm is usually restored.

Action of Drugs on the Auricle.

(1) *Quinidine*,[2] by acting directly on the auricular muscle, prolongs the effective refractory period; it also shows conduction, and therefore the transmission intervals widen and the auricular rate diminishes. The lengthening of the effective refractory period tends to close the gap of a circus movement and to bring the latter to an end, whilst the slowing of conduction tends to have the opposite effect. It is only when the action of quinidine in lengthening the effective refractory period is greater than its action in slowing conduction that this drug is effective in abolishing clinical auricular fibrillation; thus is explained the fact that quinidine is therapeutically efficient only in about 54 per cent. of cases of auricular fibrillation. When it is unsuccessful its effect is probably more marked in slowing conduction (or the gap being shortened, owing to increase of the effective refractory period, the circus movement is diverted into a longer path, where a sufficiently large gap for its maintenance may persist).

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* From the Mater Misericordiæ Hospital, Dublin.

Quinidine, also, partly (in experiments completely) depresses vagus action (probably by acting on the nerve ganglia), and it therefore acts indirectly on the auricular muscle by increasing the effective refractory period. These effects of quinidine are more in evidence in auricular fibrillation than in flutter. There is also evidence that this drug may produce delay in intraventricular conduction, which is evidenced electrocardiographically by changes in the height, width, and form of the Q R S complex (as illustrated in Case 2).

(2) *Digitalis.*[3]—Full therapeutic doses of this drug, by increasing vagal tone, reduces the length of the refractory period and tend to increase the rate of conduction; digitalis, therefore, usually increases the rate of the circus movement in auricular fibrillation. On the other hand, by acting directly on the heart muscle, it increases the length of the refractory period, and, when the heart muscle is responding rapidly, retards conduction and therefore tends to decrease the rate of the auricular oscillations. The predominant action of the drug seems to be through the vagus, because in practice the rate of the auricular oscillations in fibrillation are, as a rule, somewhat increased. From the point of view of closure of the gap, however, these two actions are opposed to each other, and therefore the circus movement is rarely abolished by digitalis action. Lewis showed that flutter may frequently be converted into fibrillation by the action of digitalis, and that, if the drug be then discontinued, normal sinus rhythm will often appear. It is not fully understood how flutter may be converted into fibrillation by the use of digitalis; the fundamental differences between the two conditions seem to be that in fibrillation the refractory period is less, the path of the circus movement shorter, the rate of the circus movement greater, and the gap smaller than in flutter; if, now, the vagus action of digitalis is predominant in flutter the refractory period is shortened, conduction rate is increased, and the rate of the circus movement is increased; the gap may therefore become shorter. In other words, there is a shifting of all these properties in a direction which could, one would suppose, favour the conversion of flutter to fibrillation.

The treatment of auricular fibrillation with digitalis and quinidine is fairly well understood and comparatively successful, but, since flutter is relatively rare, reports of its treatment are not numerous. There seems to be a common belief that quinidine should not follow digitalis without an interval, but it is not easy to discern any reason why one should wait until the digitalis effect has worn off—indeed, the argument seems to point the other way.

This paper records five cases of auricular flutter which may be of interest.

CASE 1.—It was not possible to study this case in detail. Clergyman, aged 69 years, seen July 9th, 1923. Height 6 ft. 2 in. Family history and previous history not relevant.

Complaint.—Palpitation and rapid pulse-rate for two years previously; some breathlessness on moderate exertion; feet and ankles became swollen towards evening; the patient, however, stated that he was not greatly restricted in his activities and could attend to his duties fairly efficiently.

Physical Examination.—Radial and brachial artery walls slightly thickened; retinal arteries appeared normal; heart found on palpation and percussion to be slightly enlarged to the left. Pulse-rate varied from 108 to 120 and the pauses between the beats were often somewhat unequal, but there was no gross irregularity; the beats were of equal strength. Blood pressure 180/80. The urine contained a trace of albumin and occasional granular casts, calcium oxalate crystals, and a few white and red blood cells. The prostate was somewhat enlarged. There were no other abnormalities on clinical examination. An electrocardiogram† showed auricular flutter with 2 : 1 to 3 : 1 block (Fig. 1). Pressure over the vagi did not slow the pulse.

Treatment.—The patient received 1 g. of digipuratum and grs. 13½ of powdered digitalis leaves over four days; on the third day the pulse-rate began to drop and on the fourth it was about 70 per minute. An electrocardiogram then showed that auricular flutter still persisted, but that the degree of block had increased to 4 : 1, giving a pulse-rate of about 70; the blood pressure was 186/100. 30 minims of tincture of digitalis per day, by mouth, sufficed to keep the ventricular rate thereafter about 70 per minute. The patient was advised to take the 30-minim dose of tincture of digitalis every day and was given suitable instructions in relation to work, diet, and exercise; he was discharged on the understanding that he was to report from time to time. He was not seen again until July 24th, 1924, when I was called to the country to examine him. He was suffering from mental confusion with some cerebral excitement; the axillary temperature was 100° F., but physical examination was otherwise negative; he was still taking the digitalis as prescribed, and his pulse was regular at a rate of 76 per minute. The blood pressure was 200/110. It was not possible to get a polygraph tracing. He was put on a salt-poor diet and made a complete recovery in a few weeks. He paid a flying visit in May, 1925, and appeared to be in good health with pulse-rate 76 and regular, blood pressure 176/100, and heart only slightly enlarged to the left. He was still taking digitalis. He was advised to come for electrocardiographic examination, but did not do so until Sept. 5th, 1925; at that time the pulse-rate was regular at 74 per minute, blood pressure 172/102, and the heart slightly enlarged to the left; he looked and felt well and was able to carry on his work at a slightly reduced level in comfort. The electrocardiogram showed sinus rhythm, flutter having disappeared, with splintering of Q R S in lead III. (place accidentally destroyed). He was advised to discontinue the digitalis, which he was still taking. He reported on Jan. 10th, 1926, and was found to be in good health and fairly active; the pulse-rate was 74 and regular. He refused electrocardiographic examination. He returned again on May 30th, 1927; he stated that he was comparatively well and was able to walk, at a moderate rate, from four to six miles per day and to carry out his duties fairly efficiently. For the last three weeks he had noticed that his pulse was slightly irregular, but this did not cause him any inconvenience. His blood pressure was 170/110 and pulse-rate 102. The impulse beat was 12·5 cm. from the middle line in the fifth space. The radial artery walls were normal or very slightly thickened. The pulse was slightly irregular in rate and perhaps in force. Electrocardiographic examination showed auricular flutter with 4 : 1 block, otherwise the electrocardiogram was normal. He had not used salt for almost three years. In view of the fact that the circulation seemed to be fairly efficient, that there was a 4 : 1 block, and also because of his age and of the possibility of intra-auricular thrombi, it was decided not to attempt to abolish the flutter. He was accordingly advised to take 22 minims of tincture of digitalis once a day. He was seen again on August 20th, 1927; at that time the blood pressure was 156/92, the impulse beat was 13·5 cm. from the middle line, and the pulse-rate was 74 and regular; he had given up taking digitalis for two weeks previously. The electrocardiogram revealed auricular flutter with a 4 : 1 ventricular response (Fig. 2). He stated that he felt well and could attend to his work and take a moderate amount of exercise without inconvenience. He returned again on Oct. 4th, 1927, complaining of slight breathlessness on exertion. The electrocardiogram now showed flutter with 2 : 1 to 3 : 1 block and the pulse-rate was about 108 and slightly irregular; he had taken no digitalis for about eight weeks. The blood pressure (auscultatory method) was 170/90; it was noticed that only half the beats came through to the wrist, or were audible over the brachial artery, from 170 to 120 mm. Hg during decompression of the armlet of the sphygmomanometer, but all came through from 120 to 90 mm. Because these features seemed to indicate a doubtful prognosis, and because of apparent escape of the auro-ventricular node from digitalis control, with consequent increased ventricular rate, the patient was again put on digitalis—27 minims of the tincture per day. When seen on Oct. 27th, 1927, he was still taking digitalis as prescribed, the pulse-rate was 86 per minute, and his only complaint was very slight breathlessness on moderate exertion and consciousness of his heart beat when lying on his left side; he stated that he felt improved; the electrocardiogram showed flutter with 3 : 1 to 5 : 1 block (occasionally 2 : 1); the pulse-rate was 90 and slightly irregular; the blood pressure was 152/90, all beats coming through to the wrist at 152 mm. Hg. The patient returned on Dec. 5th, 1927; he was still taking 27 minims of tincture of digitalis per day; the blood pressure was 172/84, pulse-rate 76 and regular, and impulse beat about 11 cm. from the middle line. The electrocardiogram showed sinus rhythm (Fig. 3); a few days after his previous examination (Oct. 27th, 1927) he became aware that the slight breathlessness on exertion had disappeared and that he was no longer aware of the beating of his heart when lying on his left side as he had been for some months previously. When, in what manner, and why flutter disappeared cannot be stated, but apparently our fear in this case that the inducting of sinus rhythm might cause detachment of thrombi was groundless.

† Time marker shows fifths and twenty-fifths of a second; 1 cm. excursion of string is equal to one millivolt. The tracings are reduced for publication.

Comment on Case 1.

It is unprofitable in this case to speculate on when or how, in the first instance, auricular flutter gave place to sinus rhythm, as the observations were of necessity so infrequent and imperfect. It is interesting to note the relapse to flutter which apparently occurred after an interval of almost two years, as far as one can judge from the history. Final treatment directed towards the abolition of flutter and the restoration of sinus rhythm (by larger doses of digitalis followed by quinidine as described later) was considered unwise in this patient owing to the possibility of the presence of intra-auricular thrombi, which might become detached if sinus rhythm were induced, the age and the likelihood of progressive degenerative myocardial change; moreover, the efficiency of the circulation was quite good when digitalis was given in such daily doses that 3 : 1 to 4 : 1 auriculo-ventricular block was maintained even while auricular flutter continued. However, sinus rhythm appeared finally after some months of digitalis treatment without quinidine and with no untoward results. It is of interest to note the presence of flutter at a comparatively advanced age—flutter was last observed when the patient was 73 years old—especially as the consequent heart failure was easily controlled by digitalis and as flutter finally disappeared with no symptoms of detachment of intra-auricular thrombi.

CASE 2.—A farmer, aged 39 years, consulted me on Dec. 15th, 1925. He was 6 ft. 1½ in. in height and weighed 240 lb. He complained of fluttering in his chest and dyspnœa on slight exertion.

Previous History.—Measles and mumps in childhood; typhoid fever when 18 years old; gonorrhœa 12 years ago. Both knees became swollen and painful nine years ago and there was also slight swelling of the ankles; he recovered after about ten days in bed and does not know whether he had a rise of temperature; his tonsils were removed ten months later, although he was never subject to sore-throat.

Present Illness.—On Dec. 1st, 1925, he noticed dyspnœa, palpitation, and tachycardia on slight exertion, but these symptoms disappeared on resting; since then the same symptoms had recurred several times, sometimes while resting, but they were especially prone to appear after breakfast or on exertion. I saw him for the first time in an attack which had apparently persisted for at least six days.

Physical Examination.—Face slight cyanotic, slight œdema of legs, heart seemed somewhat enlarged to the left, but difficult to map out. No cardiac murmurs. Pulse and heart-rate about 172 per minute and regular. Liver and spleen not palpable. Lungs normal. Blood pressure 112/90. Blood Wassermann reaction negative. The electrocardiogram showed auricular flutter, with 2 : 1 block (Fig. 4). Pressure over vagi or eyeballs did not slow the pulse.

Course and Treatment.—It was decided to try the effect of quinidine sulphate by mouth after the administration of 0·4 g. had shown that the patient did not have an idiosyncrasy for the drug. From Dec. 18th to 24th 14·8 g. of quinidine sulphate were given by mouth, in doses of 0·4 g. as follows:—

Dec. 18th ..	1 × 0·4 = 0·4 g.	Dec. 22nd ..	6 × 0·4 = 2·4 g.
,, 19th ..	4 × 0·4 = 1·6 g.	,, 23rd ..	5 × 0·4 = 2·0 g.
,, 20th ..	5 × 0·4 = 2·0 g.	,, 24th ..	3 × 0·4 = 1·2 g.
,, 21st ..	13 × 0·4 = 5·2 g.		

After 9·2 g. of the drug had been taken (Dec. 21st) the flutter waves became increased in length, apparently due to slower auricular conduction, and their rate was slower than on admission. After 11·6 g. of quinidine (Dec. 22nd) these changes in the flutter waves were still more marked, and the Q R S complex, in addition to showing a varying voltage, manifested aberration in many beats (interference with the spread of the excitation wave through the ventricle); moreover, there seemed to be a tendency on the part of the ventricle to respond more frequently to the individual flutter waves (Fig. 5). Evidently these electrocardiographic changes were evidences of the toxic action of quinidine on the conduction-genetic system. The patient, whose clinical condition was quite unchanged and who was fairly comfortable while resting, then decided, against advice, to go home for Christmas.

He was readmitted on Jan. 6th, 1926. His clinical condition was about the same as on the first admission, and the electrocardiogram again showed auricular flutter, with 2 : 1 block. It was now decided to try the effect of digitalis. The preparation used was digipuratum (Knoll), given by mouth in tablet form. Previous experience had shown that full clinical digitalisation in auricular fibrillation is nearly always obtained with digipuratum by the administration by mouth of 1 g. to a patient of average weight. 1·1 g. had been given by mouth in divided doses over three days when the arrhythmia suddenly changed from auricular flutter to auricular fibrillation, the pulse- and heart-rate dropping to about 82 per minute and being fairly regular (Fig. 6). The patient now found that he could undertake moderate exercise with comfort. He again insisted on leaving the hospital to transact some urgent business (Jan. 10th), not taking digitalis.

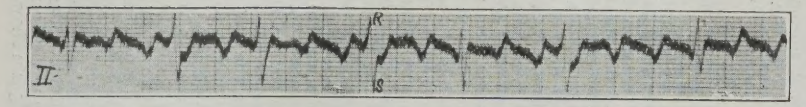
He returned on Jan. 20th, 1926, in the same condition as on the first occasion, and the electrocardiogram showed auricular flutter with 2 : 1 block. From Jan. 21st to 22nd he received 1 g. of digipuratum in divided doses, and shortly after the last dose auricular fibrillation appeared again. As he again wished to leave hospital we decided to endeavour to induce the return of the normal rhythm with quinidine; consequently, after waiting in vain for 24 hours in the hope that, on the cessation of the digipuratum treatment the normal rhythm would appear, 2·4 g. of quinidine sulphate were given in doses of 0·4 g. every second hour. An electrocardiogram taken one hour after the last dose showed normal sinus rhythm (Fig. 7). The patient now felt quite comfortable, even on considerable exertion, and left hospital on Jan. 26th with normal cardiac rhythm, pulse- and heart-rate about 80, and blood pressure 124/76. He returned on Feb. 13th and April 21st for examination and electrocardiogram, and was in every respect normal.

On August 10th, 1926, the patient was once more admitted, suffering from an attack of auricular flutter, with 2 : 1 to 4 : 1 block, which had commenced ten days previously, the signs and symptoms being practically the same as on the first occasion. Eight-tenths of a gramme of digipuratum caused no change in the electrocardiogram; after 24 hours' interval quinidine was started and 4·8 g. were given over a period of two days, when the electrocardiogram again showed lengthening and diminished voltage of the flutter waves (2 : 1 block) with occasional slight aberration. The quinidine was then stopped. In 24 hours the flutter waves were of the same type as on admission with 2 : 1 to 4 : 1 block. After two days' interval (flutter still present) it was decided to push digitalis in the hope of again inducing auricular fibrillation, and 2·1 g. of digipuratum were given in divided doses over four days. One hour after the last dose of the 2·1 g. of digipuratum the pulse-rate suddenly fell to about 70 per minute and the electrocardiogram showed auricular fibrillation. No drug was given now for 48 hours, in the hope that on the withdrawal of digitalis auricular fibrillation would give place to normal rhythm; as fibrillation persisted 2·4 g. of quinidine sulphate were given in divided doses of 0·4 g. every two hours, and about one and a half hours after the last dose an electrocardiogram showed normal sinus rhythm with a pulse-rate and heart-rate of 76. The patient was discharged in a few days with a normal rhythm, feeling quite well even after moderate exercise.

On May 26th, 1927, he returned once more, complaining that his heart trouble had suddenly developed on May 25th at about 9 P.M. Between the onset of the attack and his visit he had taken 1 g. of digipuratum by mouth. The pulse-rate was 140 per minute and slightly irregular. The electrocardiogram showed auricular flutter with 2 : 1 to 3 : 1 heart-block. He received 3·6 g. of digipuratum by mouth between the onset of this attack of flutter on May 25th and the appearance of auricular fibrillation on May 30th. It is to be noted that in this attack a large dose of digitalis was necessary to induce auricular fibrillation. On June 1st (fibrillation still present) he was given 0·4 g. of quinidine at 6 A.M., 8 P.M., and 10 A.M. (total 1·2 g.); about 11 o'clock on that morning he noticed a slight palpitation, and then he said that he felt his pulse had become steady and that he was no longer conscious of abnormal beating of the heart. He was electrocardiographed at 12 noon on the same day; the tracing showed normal sinus rhythm with a pulse-rate of 84. He was discharged that afternoon, as he had urgent business, on small doses of digitalis (12 minims of the tincture once daily). During this period in hospital a careful search was made for septic foci, and the only positive finding was by roentgenographic examination of the teeth, carried out by Dr. J. A. Geraghty, which revealed an abscess around the posterior root of the first right upper molar tooth; the tooth was extracted. On Oct. 1st, 1927, he reported that he was still well. He discontinued the digitalis in the first week of October, 1927. He returned to hospital on Nov. 17th with a pulse-rate of 140 and auricular flutter (2 : 1 block); flutter had apparently reappeared on Nov. 7th. On Nov. 18th, at 2.30 P.M., he had received 1·2 g. of digipuratum in divided doses, and the electrocardiogram at that time showed flutter 3 : 1 to 8 : 1 block; at 3 P.M. he got 0·4 g. digipuratum (total 1·6 g.), and at 6.15 P.M. on the same day auricular fibrillation was present. Next day, at 7.30 A.M., auricular fibrillation was still shown in the electrocardiogram, and 1·2 g. of quinidine was subsequently given in divided doses; at 11.30 A.M. the patient noticed some vague changes in his heart beat; at 11.42 P.M. the electrocardiogram showed sinus

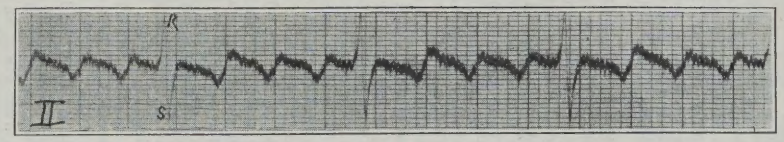
ELECTROCARDIOGRAMS RECORDING RESULTS IN TREATMENT OF AURICULAR FLUTTER.

FIG. 1.



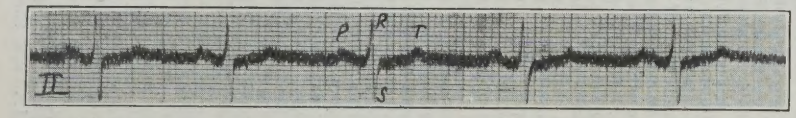
CASE 1.—Auricular flutter; 2:1 to 3:1 block; before treatment.

FIG. 2.



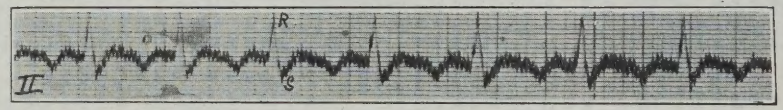
CASE 1.—Flutter under treatment with digitalis; 4:1 block.

FIG. 3.



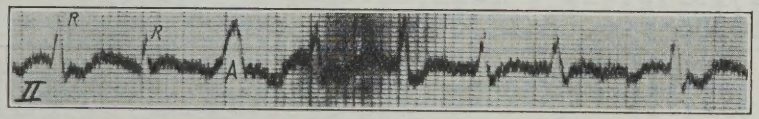
CASE 1.—Sinus rhythm after digitalis.

FIG. 4.



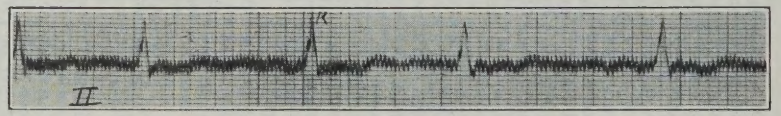
CASE 2.—Auricular flutter; before treatment; 2:1 block.

FIG. 5.



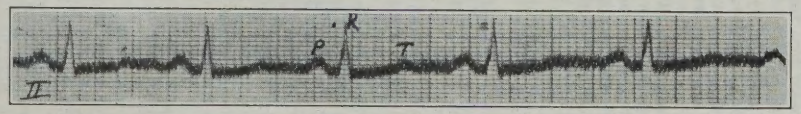
CASE 2.—Flutter after 11·6 g. of quinidine; aberration (A); slowed auricular conduction; the degree of auriculo-ventricular block is less than in Fig. 4.

FIG. 6.



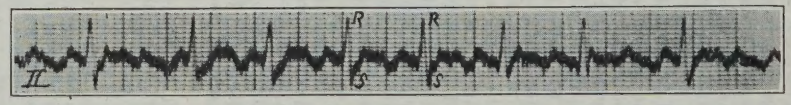
CASE 2.—Auricular fibrillation after digitalis alone.

FIG. 7.



CASE 2.—Sinus rhythm; result of digitalis followed by quinidine.

FIG. 8.

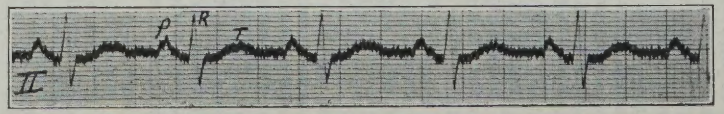


CASE 3.—Auricular flutter; before treatment 2:1 to 3:1 block.

FIG. 9.

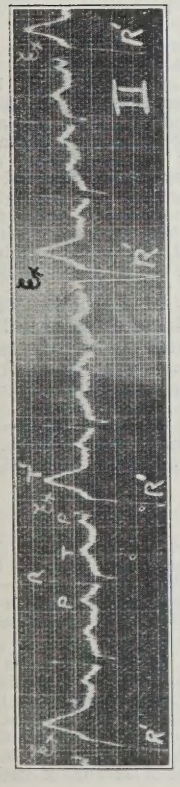
CASE 3.—Auricular fibrillation after digitalis.

FIG. 10.



CASE 3.—Sinus rhythm; result of digitalis followed by quinidine.

FIG. 11.



CASE 3.—Sinus rhythm and ventricular extrasystoles arising in left ventricle.

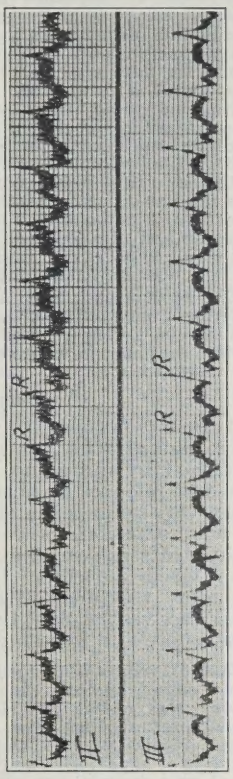
FIG. 12.

CASE 3.—Paroxysmal ventricular tachycardia and auricular fibrillation; result of digitalis.

FIG. 13.

CASE 3.—Sinus rhythm and ventricular extrasystoles (x) two and three-quarter hours after 1·6 g. quinidine.

FIG. 14.



CASE 4.—Auricular flutter with 1:1 ventricular response.

rhythm, and the pulse-rate was 82 and the blood pressure 118/80; he was discharged feeling quite normal and directed to take 22 minims of tincture of digitalis per day. He has remained well up to the present time.

Comment on Case 2.

This case apparently illustrates the toxic effects of moderate doses of quinidine on the myocardium in auricular flutter as evidenced by the electrocardiograms—viz.: (*a*) delayed interauricular conduction and slowing of the rate of the auricular (flutter) circus movement; (*b*) ventricular aberration. These changes were taken as showing that further quinidine dosage might not be safe, and the drug was discontinued. Quinidine alone proved ineffective in abolishing auricular flutter. Digitalis alone in adequate dosage caused flutter to be replaced by auricular fibrillation, but flutter reappeared later on cessation of digitalis treatment. When auricular fibrillation replaced flutter as an effect of digitalis, a small amount of quinidine was sufficient to cause a return of normal sinus rhythm in a few hours without any "toxic" signs appearing in the cardiogram. Flutter reappeared after an interval of something over seven months and normal rhythm was restored by digitalis followed by quinidine, as on the first occasion (when quinidine alone, not preceded by digitalis, failed). Once again, after a further interval of almost ten months, flutter occurred, and on this occasion a large dose of digitalis was required to transform the arrhythmia to fibrillation, but when this was accomplished a small dose of quinidine was sufficient to restore sinus rhythm. An alveolar root abscess was the only septic focus discovered. Finally, after something over seven months, the patient discontinued the digitalis, and flutter recurred after about five weeks; on this occasion digitalis caused flutter to be replaced by fibrillation in 28 hours, and subsequently small doses of quinidine succeeded in replacing the latter by normal sinus rhythm. Thus four attacks of flutter occurred in two years, and each attack yielded to digitalis followed by quinidine, with restoration of sinus rhythm.

CASE 3.—Housewife, aged 50 years, was seen on Dec. 13th, 1926, complaining of palpitation and breathlessness on exertion. Family history not relevant.

Previous History.—Measles and scarlet fever in childhood; "inflammation" of her "throat" 20 years ago; since then frequent "sore-throats"; peritonsillar abscess opened three years ago; frequent attacks of acute rhinitis and bronchitis; varicose veins in legs; all teeth extracted four years ago. Two children born dead at full term; no living children. Venereal disease denied.

Complaint.—Dyspnœa and palpitation on slight exertion.

Present Illness.—A year ago when running she had an attack of "palpitation" accompanied by dyspnœa. Since then she experienced several similar attacks on exertion. In October, 1926, she had acute bronchitis accompanied by palpitation and dyspnœa. She apparently recovered from the bronchitis, but the palpitation became progressively worse on exertion and recently appeared on even slight physical effort.

Physical Examination.—Pulse 166 and respirations 26 per minute. Temperature (mouth) 98·8° F. The pulse was regular with occasional dropped beats, and all cardiac systoles gave rise to a pulse at the wrist. The face, hands, and feet were cyanosed, and there was moderate dyspnœa at rest. The tonsils were hypertrophic and the submaxillary lymph-glands and the superficial cervical glands along the right sterno-mastoid were enlarged. Sibilant rhonchi were heard diffusely over the lungs and crepitations at the bases; there was impaired resonance and feeble breath sounds over both bases. The heart was enlarged to the left, the impulse being in the fifth intercostal space, 11·5 cm. from the middle line; a mitral systolic murmur was heard over the apex and transmitted to the left axilla; there was slight accentuation of the aortic second sound. There was slight œdema of the shins and ankles. The abdominal reflexes were absent. The blood pressure was 190/140. The right lobe of the thyroid gland was slightly enlarged and firm and could be palpated by Lahey's "dislocation" method; there was a fine tremor of the hands (rate about 4 to 6 per second). The urine contained no albumin, sugar, or casts. The patient was freely coughing up a moderate amount of mucoid sputum. There were no other abnormalities on clinical examination. Blood chemistry: Urea nitrogen, 11·6 mg.; non-protein nitrogen 20 mg., uric acid 3 mg., and creatinin 1·4 mg. per

100 c.cm. of blood. Urea-concentration test normal (2·3 per cent.). Fixation of specific gravity and water excretion tests indicated slight kidney deficiency. A provisional diagnosis was made of auricular flutter, myocardial failure, mitral incompetence, chronic bronchitis, and congestion of the bases of the lungs. The blood Wassermann reaction was ++. An electrocardiogram showed auricular flutter with 2 : 1 to 3 : 1 block (Fig. 8). The patient had been getting 5 minims of tincture of digitalis for ten days previously. After the tachycardia has been successfully treated the basal metabolic rate was found to be +32 per cent.; there were no hyperthyroid eye signs, and it was concluded that the right thyroid lobe probably contained a "toxic adenoma." Pressure over the vagi or eyeballs did not slow the pulse.

Treatment.—Between 12 midnight, Dec. 13th, and 1.30 A.M., Dec. 14th, 1·6 g. of digipuratum was given in divided doses. The pulse-rate remained at about 160 until 1.30 A.M. on Dec. 14th, when it suddenly fell to about 68 and was slightly irregular. An electrocardiogram taken on Dec. 14th at 11.30 A.M. showed auricular fibrillation (Fig. 9), the pulse-rate at this time being around 90 per minute. Several electrocardiograms were thereafter taken on Dec. 15th and 16th, and showed, generally, an increasing ventricular rate and auricular fibrillation. It was decided to endeavour to abolish the fibrillation and induce the return of sinus rhythm by the administration of quinidine. Accordingly 0·2 g. of quinidine sulphate was given orally at 12.10 P.M. on Dec. 16th; as there were no signs of idiosyncrasy, 0·4 g. was given at 3 P.M., 0·4 g. at 4 P.M., and 0·4 g. at 5.30 P.M. on the same day. At 6.5 P.M. an electrocardiogram showed that sinus rhythm had appeared with occasional ventricular extrasystoles (Fig. 10). Six hours later the extrasystoles became more frequent (about 1 in 5). A few hours after the appearance of auricular fibrillation and the slowing of the ventricular rate, the cyanosis and dyspnœa disappeared, and a little later the œdema vanished and the congestion of the pulmonary bases showed signs of clearing up; two days later the latter had completely disappeared, and on Dec. 19th the patient was able to walk about the ward without discomfort (she was kept in bed during the active treatment). She was discharged a few days later feeling quite well. Antisyphilitic and, indeed, any form of treatment was refused.

Up to June 1st, 1927, there was no return of flutter, but extrasystoles were present, varying from 1 in 3 to 1 in 10 (Fig. 11); the patient felt well and was able to take moderate exercise without discomfort. On June 17th, 1927, she returned complaining of dyspnœa and palpitation; there was cyanosis, slight œdema of the feet, and copious mucopurulent sputum; sonorous and sibilant rhonchi were heard over the lower lobes of both lungs, the resonance of which was diminished on percussion; temperature 97° F. (axilla), respirations 26, and pulse-rate 150 and regular; a mitral systolic high-pitched blowing murmur was heard and transmitted to the axilla; the cardiac impulse was located in the fifth intercostal space 13 cm. from the middle line. The patient was noticeably drowsy and apathetic. The blood pressure was 102/78. The electrocardiogram showed auricular flutter with 2 : 1 block. From 9.20 P.M., June 17th, to 12.30 P.M., June 19th, the patient received 2·1 g. digipuratum by mouth in divided doses, but, owing to occasional vomiting, which began 20 minutes after the first dose and continued irregularly throughout the administration of the digipuratum, it is impossible to know how much of the drug was absorbed. During this period the pulse-rate gradually slowed down; at 12.30 P.M., June 19th, it was fairly steady at 70 per minute and the electrocardiogram showed flutter with 3 : 1 to 4 : 1 block. On June 20th, after the patient had received the relatively large dose of 2·9 g. of digipuratum, auricular fibrillation appeared. An interesting additional arrhythmia now, however, appeared for the first time in addition to fibrillation; the patient exhibited attacks of tachycardia of 15 to 45 seconds' duration, the pulse-rate suddenly changing from about 86 to 150 per minute. It was difficult to get good tracings of the tachycardia owing to restlessness, but Fig. 12 illustrates the findings. Evidently this new arrhythmia was an example of the comparatively rare condition known as ventricular tachycardia. It is interpreted as such because (*a*) the auricles were fibrillating, and therefore it could not have an auricular origin; (*b*) because the ventricular complexes were distinctly abnormal in form; and (*c*) because of the presence of somewhat similar ectopic beats before (Fig. 11) and after (Fig. 13) the paroxysms.[4] It is probable that the attacks of tachycardia, which apparently arose from a focus in the left ventricle, were due to digitalis intoxication, because they became shorter and more infrequent from the cessation of digitalis therapy on June 20th and were no longer present on June 24th, when only occasional extrasystoles of similar form were seen. Fibrillation, however, persisted. It was now judged safe to give quinidine sulphate by mouth, and on June 24th 1·6 g. was given in divided doses. Two and three-quarters hours after the last dose of quinidine sinus rhythm was shown in the electrocardiogram with ventricular extrasystoles (Fig. 13). The pulse-rate next day was now about 80 and regular, the impulse 12 cm. from the middle line (fifth space), the mitral systolic murmur was still heard, and in addition to this a faint mitral murmur was heard in late diastole. The drowsiness, cyanosis, and dyspnœa had completely passed off and the patient was quite comfortable. She was discharged a few days afterwards on antisyphilitic treatment and taking 22 minims of tincture of digitalis per day. On Sept. 14th, 1927, sinus rhythm was still present with occasional extrasystoles arising, sometimes in the left and sometimes in the right ventricle; the P wave was normal in type and the pulse-rate was 88 per minute. The basal metabolic rate was +28 per cent., the diastolic murmur had disappeared, and the patient stated that she felt well. She was still taking digitalis, as prescribed above, on Dec. 6th, 1927, and flutter had not recurred.

This patient was placed under restraint on Dec. 18th, 1927, suffering from melancholia. She died in January, 1928, in mania, but her heart was reported as consistently normal by the physician in whose charge she was. An autopsy was not obtained.

Comment on Case 3.

Auricular flutter gave place to auricular fibrillation after digitalisation, and fibrillation, in its turn, was abolished by quinidine, sinus rhythm being restored. The case relapsed to flutter after six months and once again the same form of treatment was successful; on this occasion, however, paroxysmal ventricular tachycardia appeared as a toxic digitalis effect at a time when auricular fibrillation was present, and quinidine treatment, which was delayed four days until the ventricular tachycardia disappeared, was again successful in restoring sinus rhythm.

CASE 4.—Housewife aged 46. Admitted Jan. 19th, 1927, from county home in such a serious condition that no history was obtained. Heart-rate 216 per minute and regular, no murmurs heard; pulse could not be felt at the wrist; respirations 34 and temperature 96·2° F. (axilla). Cyanosis of hands, feet, and face; orthopnœa and dyspnœa. Blood pressure could not be read by auscultatory method. Impulse beat in anterior axillary line, liver edge felt 3 cm. below costal margin; loud rhonchi heard over thorax and moist crepitations heard at pulmonary bases. No œdema of legs. Electrocardiogram (Fig. 14) showed auricular flutter with 1 : 1 response—the ventricle responding to each circus movement in the auricle. Pressure over vagi or on eyeballs did not slow the pulse. A hundredth of a grain of strophanthin was given intravenously, after which the pulse temporarily returned to the wrist, but death occurred in two hours.

Permission for a complete autopsy was refused, so the heart alone was examined by Dr. A. R. J. Dungan. The right ventricle was markedly dilated, the myocardium being very much thinned out at the apex; posterior cusp of mitral valve was a little shortened and thickened, and aortic cusp of mitral valve had a thin ridge of minute organising vegetation along its line of closure; the root of the aorta had small patches of commencing atheroma and the coronary arteries showed similar changes, but so slight as to produce no narrowing. Sections showed some fatty degeneration of the muscle-fibres of the right auricle in the neighbourhood of the upper third of the sulcus terminalis, and a certain amount of hæmorrhage in its lower third.

In the vast majority of cases of auricular flutter there is some degree of A-V block, and only rarely do the ventricles respond to each auricular circus movement as in this patient. Only about 18 cases of flutter with 1 : 1 ventricular response are recorded.

CASE 5.—A business man, aged 60, was admitted on March 5th, 1928. Height, 5 ft. 11 in.; weight, 190 lb.

Complaint.—Breathless on exertion and slight swelling of the lower legs towards evening.

Previous History.—Smokes about 40 cigarettes a day; otherwise irrelevant.

Physical Examination.—Pulse-rate, 144; impulse beat, 9·5 cm. from middle line in fifth space. Only three teeth of his own and these show pyorrhœa and one is crowned. Moderate œdema of lower legs. Crepitations at both pulmonary bases. Blood pressure 112/92. The electrocardiogram shows auricular flutter with 2 : 1 block.

Treatment.—1·6 g. of digipuratum caused flutter to give place to auricular fibrillation in 28 hours; the digitalis was then stopped and normal sinus rhythm appeared four hours afterwards. The pulse-rate was then 56 per minute, the blood pressure 130/78, and the crepitations at the pulmonary bases and the œdema of the legs had disappeared. He was discharged on a daily dose of 20 minims of tincture of digitalis.

Twenty-two days later flutter had not recurred, the blood pressure is 142/76, the pulse-rate 72 per minute, and he feels and looks in good health in every respect. He has reduced his cigarettes to 16 per day and has promised to get the three teeth extracted.

Summary.

Five cases of auricular flutter are described. In the first case sinus rhythm appeared after an unknown interval following digitalis treatment, but relapse to flutter occurred later; adequate digitalis administration, however, caused the maintenance of 4 : 1 block between the fluttering auricles and the ventricles with the result that the circulation was quite efficiently carried on. In certain cases of flutter established for a considerable length of time, especially if associated with congestive heart failure, the possibility of the presence of auricular thrombi and of their detachment after the appearance of sinus rhythm should be considered. This consideration led us to believe that a combination of digitalis and quinidine treatment in this case might be inadvisable, especially as digitalis alone produced a degree of block which permitted of a sufficiently low ventricular rate. Eventually, however, and without quinidine, sinus rhythm reappeared while the patient was taking digitalis with no untoward results.

In the second and third cases digitalis in suitable dosage on each occasion caused flutter to be replaced by auricular fibrillation, which, in its turn, gave place to sinus rhythm as a result of treatment with quinidine. In the second case, although auricular fibrillation appeared after digitalis treatment, relapse to flutter occurred on discontinuance of the digitalis when quinidine was not used after fibrillation appeared, whilst quinidine alone in moderately large doses was unsuccessful in the treatment of flutter, but caused changes in the electrocardiograms which might be interpreted as evidence of toxic action. Each of the three relapses in the second case from sinus rhythm to flutter, as well as the first attack of flutter, was controlled by digitalis followed by quinidine; digitalis caused flutter to be replaced by fibrillation, and quinidine caused the latter to be replaced by sinus rhythm. A large dose of digitalis, however, was required on the second occasion to convert flutter to fibrillation. The two attacks of flutter in the third case were also successfully treated by digitalis followed by quinidine, but the large dose of digitalis given in the relapse caused transitory paroxysmal ventricular tachycardia.

Cases 1, 2, and 3 illustrate the tendency for auricular flutter to reappear after successful treatment.

The fourth case was an example of a comparatively rare condition; auricular flutter with 1 : 1 ventricular response.

In the fifth case flutter gave place to auricular fibrillation after digitalis and fibrillation was spontaneously replaced by sinus rhythm four hours afterwards.

Many cases of auricular flutter may be successfully treated by full digitalisation [5] with the object of inducing the appearance of auricular fibrillation; if then digitalis be stopped, normal sinus rhythm may replace fibrillation, as has been shown by Lewis. If sinus rhythm cannot be restored in this manner, fibrillation still persisting, it is suggested that the latter condition may be treated with quinidine with the object of restoring sinus rhythm. This procedure—digitalis followed by quinidine—was successful six times in two of the cases of flutter reported in this study.

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THE POSITION OF HISTOLOGY IN THE PROGNOSIS OF CARCINOMA OF THE BREAST.

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CASES of carcinoma of the breast are usually classified microscopically according to two standards; one method is by the arrangement of the cells, which may be in masses, in solid columns, or in tubules; the other is by the relative amounts of epithelial elements and fibrous tissue. Depending on the former grouping spheroidal-celled carcinomata and adenocarcinomata are described, whilst, with the latter standard, the designations "atrophic scirrhus," "scirrhus," and "medullary" or "encephaloid" are employed. Speaking generally, the prognostic value of these terms has been disappointing. Attempts have recently been made to put the subject on a more satisfactory basis. Greenough,[1] in America, and Delbet,[2] in France, have made extensive studies and published their conclusions. The former has applied the theory of dedifferentiation, used by Broders [3] in other regions, to carcinoma of the breast, and has analysed under nine headings the histological factors which may be of importance. He states, however, that "the pathological classification of these specimens rests upon the estimate of the individual observer and the weight he is inclined to give to a number of different factors." Delbet, on the other hand, rejects the theory of dedifferentiation, but recognises different morphological and physiological types of growth of varying degress of malignancy.

The histological picture, however, has been studied without due regard to the other features of the case which influence the prognosis. For example, however relatively innocent a tumour may appear under the microscope, the prognosis must be hopeless if, at the time of the operation, the disease has passed outside the field of surgical interference. On the contrary, the relative malignancy of a growth which has been completely removed when in the early or local stage is a matter of theoretical importance only. If, therefore, the histological appearance of the growth is to be of any value in giving a prognosis in an individual case, account must also be taken of the stage which the disease has reached when the patient presents herself for treatment. The best index of the degree of spread is afforded by examination of the axillary glands, the importance of which was first pointed out by Halsted and has more recently been elaborated in the Leeds figures of the Ministry of Health.[4]

Signs of Prognostic Value.

The present study was undertaken in an attempt to ascertain if there is any correlation between the histological appearance of the growth and the subsequent course of the disease, and to determine the value of such an analysis in giving a prognosis in an individual case when all the ascertainable factors have been taken into account.

Greenough's method of classification has been largely followed, but chief importance has been attached to three factors—tubule formation, inequality in size of nuclei, and hyperchromatism.

Tubule formation has been considered of favourable significance. Marked inequality in size and irregularity of outline of the nuclei has been taken to be indicative of a high degree of malignancy, and the presence of many hyperchromatic nuclei has also been considered to affect the prognosis adversely.

The amount of secretion and number of mitotic figures have been taken as qualifying the above, the former favourably and the latter unfavourably. Other

points, such as degeneration of cells, small round-celled infiltration, and hyalinisation of stroma have been noted, but little weight has been attached to them. Irregularity in size of cells has been considered together with irregularity in size of nuclei, but the estimation is often difficult owing to indistinct cell outline and difference due exclusively to mechanical influences. In the sections examined it has been noted whether each factor is absent, or present in slight, moderate, or marked degree. All points were then considered and the relative weight attached to each; the tumour was then placed in one of the following three groups:—

Group 1. Of slight degree of malignancy.
Group 2. Of moderate malignancy.
Group 3. Of marked malignancy.

In all cases the tumour was placed in the appropriate group before reference was made to the subsequent clinical history.

The following fallacies suggest themselves:—

(1) Different parts of the same tumour may show varying histological appearances. This should be guarded against by examining a sufficiently large portion, preferably cut from the periphery, where active growth is taking place. With this precaution the objection should not be valid, and, in fact, in those instances in which two different portions of the same tumour were available, both have always been placed in the same group.

(2) The histological appearances of metastases may differ widely from that of the primary growth, so that one should base the estimate of malignancy on sections from the primary growth alone.

The criteria of the degree of malignancy which have been adopted are, therefore, signs of rapidity of growth and of the extent of departure from the structure of the fully developed epithelium of the breast.

Material Investigated.

The present series consists of 50 cases, all of which were submitted to a radical operation between the years 1919–23 inclusive. The operations were performed in each case by the same surgeon, as it was thought that this would obviate discrepancies dependent on varying operative techniques. Only those cases were taken in which a sufficient clinical history was available and microscopical sections had been preserved, and in which the results were known up to the end of 1926. The minimum time since operation is therefore three years, and the maximum seven years. The records of cases during the war years were in many cases deficient, and the tracing of patients operated on before the war was found to present too many difficulties to be of value.

Results of Investigation.

If the cases are subdivided into groups according to the histological index of malignancy determined as above, there are:—

GROUP 1.—Slight histological malignancy, 16 cases.

Alive and well	11
Died of recurrence	2
Died following operation	1
Died of other causes	2

GROUP 2.—Moderate histological malignancy, 12 cases.

Alive and well	5
Died of recurrence	6
Died of other causes	1

GROUP 3.—Marked histological malignancy, 22 cases.

Alive and well	5
Died of recurrence	17

Thus there does appear to be a progressive deterioration in the results as the histological index of malignancy increases. This supports the conclusions of Greenough, who found:—

Group 1	68 per cent. of cases were cured.
Group 2	33 " " " "
Group 3	0 " " " "

The chief difference between the latter's figures and those recorded here is that, in the highest degree of malignancy he found no "cures," whereas in Group 3 of this series 5 cases out of 22 were alive and free from recurrence at the time of the investigation.

Since the above figures show that there is some relationship between the degree of malignancy estimated histologically and the subsequent course of the disease, it is next necessary to consider in what cases the criteria mentioned are of practical value in prognosis. To study this question the material has been subdivided into three tables (A, B, and C).

TABLE A.—*Cases Operated on before Axillary Involvement.*

Histological group.	Cases.	Alive and well.	Died of recurrence.	Died other causes.
1	8	7	0	1
2	4	4	0	0
3	5	5	0	0
Total	17	16	—	1

The analysis shows: (1) A relative preponderance of cases of slight or moderate malignancy. (2) A uniformly good result whatever the grade of malignancy. (The term "good result" is used in this paper as indicating the result within the time limits of the investigation.)

In other words, the less malignant a tumour the greater the chance that it will be treated in this early favourable stage, but should a more malignant tumour be operated upon adequately at this stage the result will be equally good.

In Table B are given advanced cases showing ulceration, fixity to pectoral fascia, adherent axillary glands, &c., in which operation was undertaken purely as a palliative measure.

TABLE B.—*Advanced Clinical Cases.*

Histological group.	Cases.	Alive and well.	Died of recurrence.	Died other causes.
1	3	1	2	0
2	3	0	2	1
3	9	0	9	0
Total	15	1	13	1

The analysis in this case shows: (1) A preponderance of cases of the higher grades of malignancy. (2) A practically uniformly fatal issue except in one patient with a low histological malignancy.

In other words, when this stage is reached the time for a "cure" has passed for the vast majority of cases, whatever the histological picture may be. Occasionally, however, as in one case in which a palliative operation three years after the tumour appeared was followed by three years of comfortable life, a low histological index may be associated with a more chronic course than would otherwise be expected.

So far, then, the histological features have not added much of value to the clinical data on which a prognosis is based, though demonstrating some facts of interest. It is in the intermediate type of case that they would be expected to be of greater value (Table C).

TABLE C.—*Intermediate Clinical between those of Tables A and B.*

Histological group.	Cases.	Alive and well.	Died of recurrence.	Died cause not known.
1	5	3	0	2
2	5	1	4	0
3	8	0	8	0
Total	18	4	12	2

The analysis shows: (1) That the only four cases known to be alive and well at the time of inquiry

HISTOLOGICAL CLASSIFICATION OF BREAST TUMOURS.

Group I.—Slight Malignancy.

FIG. 1.

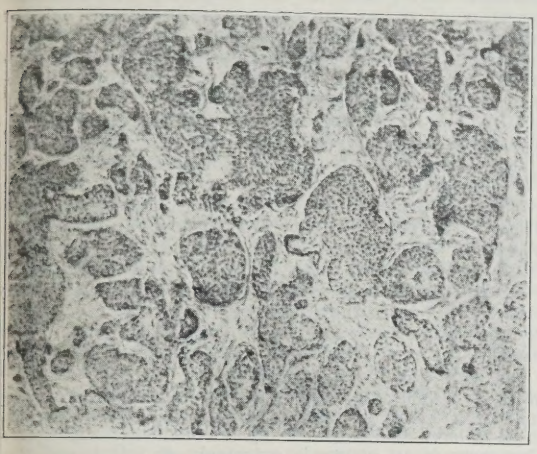
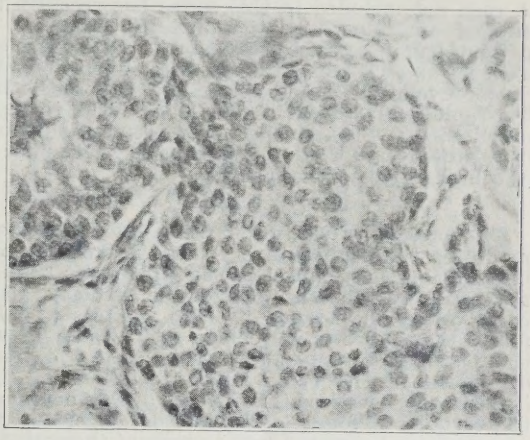


FIG. 2.



Tubule formation; cells even in size and staining.

Group II.—Moderate Malignancy.

FIG. 3.

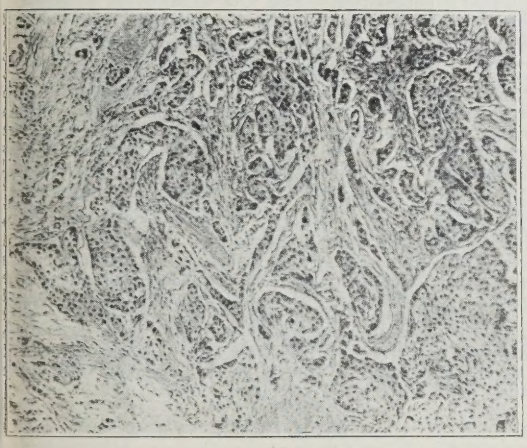
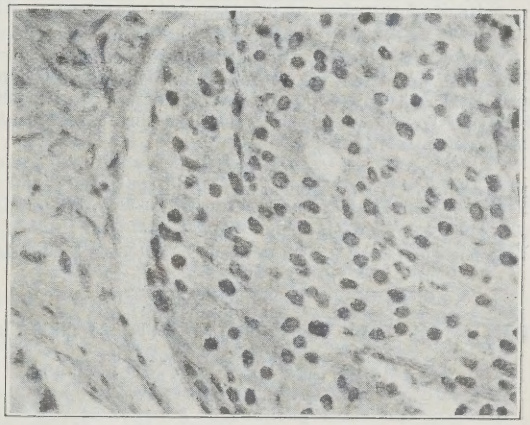


FIG. 4.

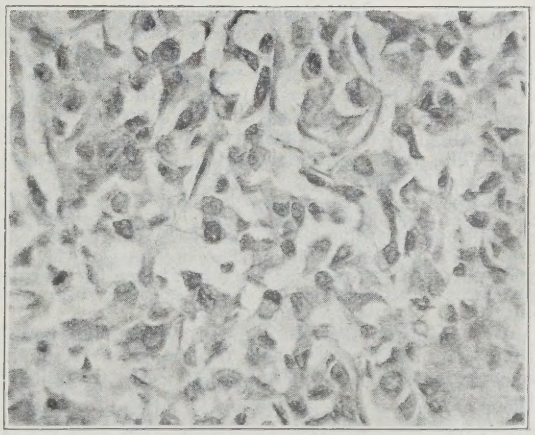


Absence of tubule formation; cells slightly uneven in size and staining.

Group III.—Marked Malignancy.

FIG. 5.

FIG. 6.



Irregularity of growth; absence of tubule formation; cells markedly uneven in size and staining.

These plates are given as examples of the groups into which the breast tumours have been classified.

belonged to the lesser groups of malignancy. (2) That all the cases of high malignancy died of the disease.

If, therefore, one should operate on a patient in whom axillary involvement is early, a favourable histological picture is of definite prognostic importance. A case not included in this series has recently been studied and illustrates the opposite feature. This patient had a small breast tumour with very early axillary involvement. Shortly after operation recurrence developed, and death ensued 18 months later. The rapidly unfavourable result was difficult to explain on clinical grounds, but became more explicable when it was discovered that microscopically the tumour was of a high degree of malignancy.

Conclusions.

The present study, even when due allowance is made for the comparatively small number of cases, in addition to confirming the prognostic value of microscopical examination of the axillary glands, corroborates the results of those workers who have found that there is a definite relationship between the histological appearance and clinical course of carcinoma of the breast. This relationship shows itself in three ways: (1) In cases of low malignancy the early or favourable stage is of longer duration, and patients are more likely to present themselves for treatment before there has been much spread of the disease. (2) In advanced cases palliative operation tends to be followed by more prolonged benefit if the histological index is low. (3) Histological estimation of the degree of malignancy is of value in prognosis in a limited number of intermediate cases—i.e., those in whom axillary involvement is early.

We wish to express our indebtedness to Mr. Sampson Handley, surgeon to the Middlesex Hospital, and to Prof. James McIntosh, director of the Bland-Sutton Institute of Pathology, for direction and assistance in this work.

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PROGNOSTIC TESTS IN TUBERCULOSIS.

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THE object of this work was to investigate the value of certain tests applied to pulmonary tuberculosis. The comparative facility with which the stage and progress of the disease can be estimated in so-called "surgical" tuberculosis suggested that a large number of such cases might be used to standardise the tests. The following were selected: (1) a modification of Erhlich's diazo-reaction, called the urochromogen reaction; (2) the Arneth[1] count of lecucocytes; (3) the degree of cutaneous pigmentation; and (4) the quantitative von Pirquet cutaneous test. The urochromogen reaction (U R) was described by Weiss[3] in 1911.

Into each of two test-tubes is put 1 c.cm. of urine, and 2 c.cm. of distilled water are added. To one tube are added three drops of 1/1000 solution of potassium permanganate, and the mixture is shaken. The presence of the faintest yellow (compared with the control) is taken to indicate the presence of urochromogen. The test is read as positive only when the mixture remains clear.

In comparision with similar tests, this has been found the most useful and delicate.[4 5 6] With a few exceptions [7] it has been applied only in pulmonary tuberculosis.

The cases investigated in the following series were all children under the age of 16. Their tuberculous lesions were non-pulmonary, and they were in-patients at the Liverpool Open-air Hospital at Leasowe. They were examined clinically every month as a routine, and more frequently if indicated. The urines were tested for urochromogen once every month, and if positive were tested every week or fortnight. It was found useful to have a second control consisting of normal urine, and in the majority of cases the proportion of urine to water was increased. It is essential that the potassium permanganate solution be freshly prepared. The test must be done in daylight, as slight colour changes are not apparent in electric light. The degree of intensity of the reaction was judged by the naked eye. For the purposes of comparison, urines from 152 cases in the medical and surgical wards of a general hospital were tested for urochromogen. Two gave a positive reaction, one a case of pneumonia, the other a case of diabetes mellitus. The reaction was proved to be independent of common abnormalities in urine. The work of Addis [8] in connexion with blood pigments suggested that urobilinogen might be responsible for the colour change. This was disproved.*

Recent investigations have suggested that there is some connexion between the urochromogen test and the van den Bergh reaction.

At Leasowe 360 cases were followed for periods of four to ten months. Thirty-six had a constantly positive reaction. Of these 22 have died within two years of the investigations; the recovery of 10 others is extremely doubtful, and the remaining 4 are undecided. In a year there were 12 deaths. Of these 7 had had a constantly positive U.R.; in 2 others the reaction had turned from negative to positive. The remaining 3 were proved, post mortem, to be non-tuberculous. One with extreme cachexia was thought to be suffering from miliary tuberculosis, and the absence of a positive reaction was inexplicable until the autopsy, when death was found to be due to diffuse sarcoma of the abdomen, the primary lesion being in the ovary. Eighteen cases out of 360 gave a positive reaction of slight degree and of short duration. In 6 of them a definite exacerbation of the disease was demonstrated, although in none did a change in the general condition occur. In 11 cases the reaction changed from positive to negative. In 2 others there was a marked decrease in the intensity of the reaction. In all of these there has been considerable improvement in general condition, and in 8 an arrest of the local disease. In 2 old-standing cases the improvement in general condition was in advance of the decrease in positivity. Eight cases changed from negative to positive, and in all these the change was followed by a decline in general condition and either the appearance of a fresh focus or an increase of the original one. In most of them the change in the reaction preceded the other manifestations by about a month. The rest of the 360 were all negative. Of these 4 seemed to have advanced and severe tuberculosis, but a good prognosis was given and they have since improved enormously.

Blood Films.

In examining the blood in films, an ordinary differential white count was combined with an Arneth count of the polymorphonuclear leucocytes. Some preliminary work was done with a view to forming a standard interpretation of the number of the lobes. 120 blood films were examined. In ten cases films were taken every month, concurrently with the urines. A few normal children were used as controls. In the hopeless cases—e.g., those with amyloid disease—the average count was:—

(1)	(2)	(3)	(4)	(5)
40%	39%	16%	5%	0%

Arneth index† = 87.

In those cases quiescent, or nearly so, the average count was:—

(1)	(2)	(3)	(4)	(5)
6%	33%	43%	16%	2%

Arneth index = 60·5.

The average count in the controls was:—

(1)	(2)	(3)	(4)	(5)
4%	34%	41%	19%	2%

* Thirty urines giving a positive U.R. were tested for urobilinogen (Schlesinger's test). Three gave a positive reaction. All the urochromogen was converted to urochrome (excess of potassium permanganate), which normally occurs in urine, and the test for urobilinogen was still positive. Two of the urines which gave a negative U.R. gave a positive urobilinogen reaction.

† Arneth index is obtained from the formula:—

$$(1) \text{ plus } (2) \text{ plus } \left(\frac{3}{2}\right).$$

Of the cases taken monthly, four showed marked clinical improvement, reflected in the blood picture by a gradual move to the right. In very bad cases there were practically no eosinophil cells; in the quiescent cases there was a normal or high percentage. In the cases improving rapidly there was an eosinophilia of 6 per cent. to 8 per cent. The eosinophilia will be the subject of a separate communication.

Pirquet Skin Reaction.

An endeavour was made to demonstrate any relation there might be between the activity of the disease and the rapidity and intensity of the reaction. The technique described by McNeil [11] was modified slightly. Koch tuberculin A (undiluted), human and bovine, were used with normal horse serum as a control. The reactions were watched for three weeks, and 200 Pirquet tests were done. There were 12 negative results (tests repeated). All cases giving a positive reaction with human T.A. were positive with bovine. Four that were negative with human gave a positive with bovine. A positive may be read in any time from a few minutes to a few days. A negative can only be decided by waiting three or four days. A reaction to the horse serum always disappears within five days. The stage or severity of the disease was found to bear no relation to the intensity, duration, or rapidity of the reaction. Even a child giving a negative result is more or less a clinical curiosity.

Pigmentation.

Rollier [2] and others [14] have pointed out the connexion between quiescence of disease and the pigmentation of the skin in response to heliotherapy. It was found in this series that cases with severe and progressive lesions did not form pigment, and these sandy hair and freckled type) had poor resisting powers. Favourable and quiescent cases became very brown, but a few of them subsequently relapsed. Cases with amyloid changes show a dislike and intolerance for sunlight, just as do the cases of congenital hæmatoporphyrinuria mentioned by Garrod.[9]

The intolerance of light by children with amyloid disease is confirmed by the work of J. V. Supniewski (*Journal of Physiology*, 1927, lxiv., 30), who investigated the action of physical light on organs sensitised by hæmatoporphyrin. He found that the heart, intestines, and uterus went into tonic contractions. There was a rise of blood pressure and death.

Conclusions.

It was definitely concluded that none of these tests is sufficiently delicate to differentiate between a case in which the disease is mild but active and one in which it is quiescent.

It was decided that although pigmentation is a favourable sign, it is no guarantee of inactivity.

The severity, rapidity of onset, and duration of a standardised Pirquet cutaneous reaction do not bear any relation to the severity or stage of the disease.

There is a gradual return to a normal Arneth count as a lesion becomes quiescent. There is a tendency towards normal after heliotherapy and a reversion during the winter months.

The relative percentage of lymphocytes has not been found to have any significance.‡ The presence of eosinophil cells in more than 3 per cent. or 4 per cent. is a favourable sign.

The urochromogen reaction is always present in severe cases or in late stages of the disease, when the variation in the intensity of the reaction is of value in prognosis. Its absence in an apparently severe case is a reliable indication that the defences of the body are adequate for the time. Its presence in an apparently mild or quiescent case is a very valuable indication that the disease is progressing and that the defences of the body are inadequate. Its appearance for a short time during the acute stage is not of serious import.

‡ That is to say that, in this series, the relative percentage of lymphocytes (large and small) was of no value in differentiating cases with regard to the stage of the disease (see table).

—	Urochromogen reaction.							Blood films.		
	Cases.	Always negative.	Occasionally positive.	Positive becoming negative.	Negative becoming positive.	Always positive.	Deaths.	Cases.	Average (*a*) eosinoph., (*b*) lymph. count.	Average Arneth index.
(A)	11	100%	0	0	0	0	1	5	(*a*) 1·5% (*b*) 26·5	58·5
(B)	57	100%	0	0	0	0	—	11	(*a*) 5·0 (*b*) 30·0	60·5
(C)	222	207 (93%)	15 (7%)	0	0	0	1	11	(*a*) 4·4 (*b*) 31·7	63·2
(D)	17	—	1	0	8	8	3	6	(*a*) 2·1 (*b*) 35·2	67·1–79·6
(E)	26	7	2	11†	0	4	—	8	(*a*) 2·5–6·2 (*b*) 32·6	81·7–62·0
(F)	25	1*	0	0	0	24	19	8	(*a*) 1·5 (*b*) 28·5	87·0

Clinical conditions: (A) Non-tuberculous. (B) Quiescent. (C) Active but uncomplicated and favourable. (D) Favourable cases becoming complicated. (E) Serious cases showing marked improvement. (F) Persistently serious cases.

* Non. T.B. † Two less +ve.

The conclusions of previous workers have been confirmed, except when they say [4] that cases which show a persistent positive reaction in spite of treatment have a hopeless prognosis. Five cases had a positive U.R. for seven months at least, but they have since improved and the test has become negative. Dehoff's statement, that it is of use to a surgeon whose beds are limited in selecting cases for treatment, has not been confirmed, as a single positive reaction is of no value. It would be unwise to reject a case as hopeless on such grounds; the test would be of more value to a surgeon supervising cases discharged as quiescent, for the appearance of positive U.R. nearly always precedes any appreciable change in clinical condition.

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EXTENSION OF CHARING CROSS HOSPITAL.—At the annual general meeting it was stated that the hospital has now not only obtained possession of the adjoining premises of the Royal Westminster Ophthalmic Hospital, but has obtained them free from debt, the generosity of the public having provided the £70,000 required. A further £30,000 has yet to be raised for the equipment of the new premises, and it is desired to buy a site for a nurses' hostel.

STREET ACCIDENTS AT NORWICH.—The annual report of the Norfolk and Norwich Hospital states that the recent extensions have proved insufficient to meet the demands. A serious contributory cause of the failure is the large number of street accident cases. On one occasion during the past year there were 32 motor accident cases in the wards. The average length of stay of these 32 patients was 86 days, whereas the average length of stay of all patients was only 21 days. There has consequently been a very large increase in the waiting list.

THE INJECTION TREATMENT OF VARICOSE VEINS.

AN ESTIMATE OF ITS PLACE IN PRACTICE.

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THERE are few conditions more commonly seen in a surgical out-patient department than varicose veins, which handicap a large section of the adult population by the pain and disability which they cause. Surgical excision is time-honoured but time-consuming; its application is limited and its results uncertain, while dangerous complications are by no means rare. The authors of this paper have read with interest the writings of Sicard,[2] Meisen,[3 4] and Douthwaite,[1] and have applied their methods in several hundreds of cases. The aim of this article is not to deal exhaustively with the subject, but to set forth in essential detail those applications of the method of varicose vein injection which undoubtedly relieve the patient. While the authors acknowledge the debt they owe to the pioneers in this field, it is their intention to set forth only those facts which have been abundantly demonstrated in their own practice.

Solutions Used.

In this series the two following solutions alone were used:—

1. Sodium salicylate, 25 per cent. } in equal parts.
   Sodium chloride, 10 per cent. }
2. Quinine bihydrochloride (or hydrochloride), 4 g.
   Urethane, 2 g.
   Distilled water to 30 c.cm.

These solutions must be freshly prepared and sterile. Should the quinine have crystallised out, the solution must be raised to boiling-point in a water-bath before use. Ampoule preparations are not recommended as it is doubtful whether they will keep. The best container for the solution is a conical glass flask plugged with wool, or a glass-stoppered bottle.

It is difficult to choose between the quinine and the salicylate solutions; in fact, some patients may best be treated by the injection of one drug in one part of the limb and the other in another part. In general, we recommend the sodium salicylate when the veins are large and covered with healthy skin. The quinine-urethane is the less powerful venous obliterant, but is advisable when the veins are small, the patient apprehensive, or the operator gaining experience.

Technique.

The injection operation must combine simplicity with strict asepsis. It is carried out as follows.

The patient is seated on a gynæcological chair or on an ordinary operating table, one end of which is raised as a back rest and the other allowed to hang down behind the patient's dependent legs. The feet may rest upon a stool. In this position the knees are bent at about a right angle and the whole lower extremities are abducted about 40 degrees. When the veins are situated posteriorly the patient stands upon a broad-based stool. In front of him is an assistant upon whose shoulders he leans for support. The operator sits behind him on a low chair. Should the patient feel faint—which is possible, but rare—the assistant can support him and help him to lie down.

The skin is cleansed with spirit; no coloured antiseptic can be used as it would mask the veins. The area of operation is isolated with sterile towels. A tourniquet is unnecessary, painful, difficult to handle, and increases the bleeding by augmenting venous congestion.

The injection is made with a 5 c.cm. Record syringe to which is fitted a fine hypodermic needle; both are sterilised overnight in spirit and are rinsed in sterile water before use. The needle of the charged syringe is inserted through sound skin and pushed on through healthy tissues for a centimetre. It is never allowed to pierce the vein directly; the point must always traverse sound skin and healthy connective tissue before entering the vein. In this way a valve-like puncture is produced, and post-operative backflow extravasation is rendered unlikely. It is this backflow which produces post-operative pain, discoloration, and patches of necrosis leading to ulceration.

The next step is for the operator to satisfy himself beyond any doubt whatever that the point of the needle is actually within the lumen of a vein. When blood appears in the syringe on withdrawing the plunger the injection is proceeded with. The fluid should be injected at the rate of 1 c.cm. in 5 seconds. A faster rate may cause painful spasm or even rupture of the vein. If pain is caused the needle is withdrawn and inserted at another point. As a general rule the injection is made in the direction of the blood flow, which is from the trunk toward the extremities when the limbs are vertical. The amount of fluid introduced at each puncture varies from ½ to 5 c.cm. according to the size of the vein. No more than 15 c.cm. should be given at one sitting. As a rule, three sittings are necessary for each patient; fewer may suffice to produce thrombosis in small varices, and more may be necessary for very large tortuous veins involving a whole limb.

A piece of adhesive strapping the size of a postage stamp seals the puncture when the needle is withdrawn. If several punctures have been made, a crêpe bandage or a flannel bandage cut on the bias is applied, to give comfort, protection, and support.

After the operation the patient is encouraged to walk about the room and advised to continue his usual occupations, although violent exercise should be avoided for a week. Post-operative elevation of the limb is definitely contra-indicated.

Results and Effects.

The general effect is most gratifying in the majority of patients. Often they are so pleased that they want to have more injections at once, although prudence advises the operator to wait for the results of the first treatment before proceeding. The increased sense of well-being is especially marked in women whose handicap has been so great as to make them do as much of their housework as possible sitting down with their legs up. Most of those treated have returned to work and continued in active occupations.

Among the general ill-effects noted in this series are giddiness, fainting, tinnitus and, in women, general abdominal pain, especially after quinine.

After a successful injection the vein sometimes dilates, but usually contracts and loses its blue colour immediately. An hour later it is once again prominent. On the succeeding day it is hard and thrombosed to an extent which varies directly with the amount of solution injected. There may be a feeling of fullness, but this passes off on walking about. The limb may be stiff for a few days, but this, like the cramp and joint pains of which patients often complain, passes off. The limb diminishes in size and its natural contour is restored, and after six months only the fibrous strands of the veins remain. These strands are most easily felt and persist longest over the subcutaneous surface of the tibia; they disappear rapidly where they are supported by muscle, as in the calf.

Some patients complain of a burning sensation at the time of injection; the solution—especially sodium salicylate—must not be injected too forcibly or pain and severe cramp may result. Fully half the patients complained of tenderness of the limbs for several days after operation. This is no doubt due to a mild inflammation concurrent with obliteration of the lumen. About 10 per cent. of patients showed discoloration or pigmentation round the area of injection. This may take months to disappear, and is probably due to perivenous leakage as it occurred most commonly in those cases which bled at the time of injection.

Complications.

Complications are generally due to neglect of the technique described in this paper—e.g., faulty preparation of the solution or lack of ordinary aseptic and antiseptic precautions.

In this series the only cause of failure was non-entry of the fluid into a vein, which may lead to discoloration, inflammation, or actual ulceration (two cases in our series). The technique of perivascular injection has been described by some writers,

but the authors do not recommend it, except for minute skin varices.

Mild degrees of shock and collapse are fortunately uncommon, but need mention. Douthwaite and others have suggested that this important complication may be avoided by previously testing the patient with small injections.

Embolism is exceedingly rare, although one fatal case has been recorded by Olsen.[7] It is far more frequent after surgical excision.

Acute septic phlebitis, acute cellulitis, and acute local suppuration have all been recorded and are presumably due to an infection at the time of operation. Ulceration and local gangrene may result from extravasation of the fluid, and there may be an extension of an existing eczema.

Contra-indications.

Quinine is contra-indicated in pregnancy, owing to the risk of abortion, and causes hypogastric pain and faintness during menstruation. Injection treatment has no place in advanced renal, cardiac, or pulmonary disease, nor when there is obvious high blood pressure. It is contra-indicated by deep thrombosis in the leg, which may be suspected if one leg is larger than the other, or if there is constant œdema or a history of deep lymphatic thrombosis or of acute white leg after pregnancy or typhoid fever. Acute septic thrombo-phlebitis of the superficial veins at the time of examination would negative injection treatment until the inflammation had subsided. Idiosyncrasy to quinine or salicylate must be kept in mind.

Varicose Ulcers.

There is no specific cure for varicose ulceration, and some patients respond to one treatment and some to another, while a few remain intractable to all. These latter suffer from ill-health, poor physique, and low resistance. The technique followed by the authors of this paper is as follows :—

> The ulcer is first cleaned up with fomentations or hypochlorite dressings. If the patient can afford the time he is kept in bed until the ulcers have healed and the veins are then injected, but if not the two remedies are applied simultaneously. Patients who insist on continuing their work can often be successfully treated as ambulants.
>
> The secret of success lies in the four words : Unna's paste properly applied. The patient is seated, with the leg horizontal and the feet on a stool. Unna's paste warmed to the consistency of cream is painted in a 3-inch zone around but not over the ulcer. A book-muslin bandage soaked in water is then applied from the toes to the knee and painted over with the paste. A second bandage is then applied and painted and the two are covered with a flannel bandage cut on the bias to conform to the contour of the leg. After ten days the paste stocking is removed, and the ulcer will be seen to be healing. The veins are injected at this stage and another Unna's paste bandage applied. From this time the cure of the veins and that of the ulcer go hand in hand.

Skin-grafting after excision has been used with success for small ulcers. Strapping the leg from ankle to knee with zinc oxide plaster in overlapping strips is sometimes useful ; the strapping is placed directly on the surface of the ulcer. The authors do not recommend X rays or ultra-violet rays, nor have they found endocrines or calcium chloride of much value. No success has followed infiltration of the base and edge of the ulcer with quinine. When the patient has a positive Wassermann reaction the arsenical injections may well be given into veins adjacent to the ulcer.

Conclusions.

The aim of this paper is to encourage others to apply a method, the value of which has been so well proved in clinical practice as to make it the treatment of election. It is simple, inexpensive, time-saving, and comparatively free from complications. Its value to the State is shown by the reduction it could effect in disability under the National Health Insurance Act and in rendering candidates eligible for the Services. Its value to the individual is demonstrated by the appreciation of those on whom it has been used. Recurrence does not occur, at any rate within the three years' experience on which this paper is based.

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Clinical and Laboratory Notes.

A NOTE ON CUTANEOUS AND VISUAL HALLUCINATIONS IN THE CHRONIC HALLUCINATORY PSYCHOSIS.

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HALLUCINATIONS as is implied in the name of this syndrome constitute its most outstanding characteristic. They are obsessive, compulsive, and lasting. Patients do not, except possibly in the earliest stages, recognise the hallucinations as due to the morbid states of their own minds. The symptoms, by reason of their unpleasant nature and the fatiguing conduct which they occasion, are followed in some persons by mental obfuscation and slight confusion. Beyond this there is little or no mental disorder, and patients remain of normal affections, properly orientated, of good powers of judgment, choice and reaction in such affairs as are apart from their hallucinations. The annoyance caused is not set down to the persecution of enemies. Patients present, so far as can be discovered, no signs of toxic or endocrine disorder.

The hallucinations as described in literature are auditory and I have nowhere found accounts of other sorts. I propose to give in the following abstracts of notes instances of cases in which hallucinations have been first cutaneous and secondly visual.

Description of Five Cases.

CASE 1.—A. B., aged 60, single. This patient was first seen in July, 1921. She complained of things moving about the skin and that "black things came out of the skin." She produced a pill-box containing cotton, fluff, and debris said to have come out of the skin. The feelings were constant and interfered much with sleep. She spent much time hunting for "the things" in her bed and, having captured them, she placed them in water, where she saw them wriggle. This state of affairs had lasted for years. She displayed some signs of anxiety. Her look was one of constant worry. She occasionally caught at her breath and complained of suffocating feelings. She asked if the things on the skin were alive and if they could be given to other people. Her history revealed nothing relevant. The skin showed no lesion except a few marks of scratching. From July, 1921, till January, 1924, the patient did not attend. She then said that at night she had to rub her skin and that black things thereupon came from it. The things had wings. The next attendance was in February, 1927, when she brought a box containing small feathers and bits of thread, which she said had come out of her skin.

In September, 1927, she complained that lumps came out on her face, and that microbes which she could seize ran over it. Her clothes, she said, were full of black insects. She brought with her some tea-leaves which she said came from her skin after the applications of lotion. No amount of argumentation or demonstration could shake the patient's belief as to the truth of her allegations.

CASE 2.—C. D., aged 61, single. First attended in May, 1927. Complained of irritation and rash of the scalp and upper part of the body. Insects about the size of a flea walked under her skin and came out from it. Nobody except herself saw them. They were first noticed three years before. The patient spends many hours each day attending to herself, "rubbing the skin with bread-crumbs to bring out a rash." She gets up at night to look for insects. She ceased work a year ago in consequence of her condition. There is a slight degree of dermatitis, apparently due to the over-vigorous treatment applied to herself by the patient. There is no relevant personal or family history. She cannot be persuaded that there are no insects about her.

CASE 3.—E. F., aged 64, married. First attended in June, 1927. She said that for four months before she had on four successive days washed and brushed her dog, who had lice. Through doing this she had got lice herself. She has since then seen little tiny black things over her face, which constantly irritate her by crawling about. Ever since she has daily washed her clothes with chloride of lime and herself in sulphur baths. The dog and cat have been killed. There was nothing abnormal to be seen and she could not be persuaded that she had no parasites. There was no relevant personal or family history. At later attendances she said she was a little better and had not seen so many insects. She still felt them and, about the middle of the day, "they came like a swarm."

CASE 4.—G. H., aged 44, single. First attended in July, 1927. In 1922 she had taken some children to a circus and "one of them afterwards got some lumps." The patient then began to notice tiny black things, like powder, in the bed, and on rubbing her skin with ointment, tiny things came out of it. In a hot bath she feels an intense pricking sensation, and on rubbing herself "hears things clicking." She thought she had infected other people, including her sister and the maids in a house where she had been staying. In consequence of her condition she has done no work for about 18 months. She was convinced as to the reality of the existence of a parasite.

CASE 5.—I. J., aged 42, single. This patient is a sister of G. H. Her symptoms began four years ago and after the commencement of the disease in the sister. She attributes her sister's affection to her having slept in a bed which had been occupied by a man who had died of a tropical disease. She says that the sister's affection commenced a year after this occurrence. Extracts from the patient's written description run as follows: "Irritation everywhere and burrows or bites . . . we had to cut our hair off six months ago on account of a tiny black-and-white insect fine as dust that infected the head and sprang into the eyes, nostrils and ears from the hair. . . . I sometimes noticed a brown linseed-like thing that split open and had a thread hanging out. My ears were in a terrible state of pain where they had been burrowed some time back . . . the head seems to be the most infected with this trouble. One feels things too small to be seen flick all over us." No skin lesion or parasites were to be seen, but the patient could not be convinced that this was the case. There was no relevant personal or family history.

Commentary.

In these cases commonplace itching seems definitely to have preceded the morbid mental state and to have unduly excited and riveted attention. To explain the sensation, the reputed ways of parasites are remembered and fastened on by a mental disposition of a hypochondriacal type, just as in other hypochondriacal states banal abnormal feelings, such as flatulence or palpitations, are attended to and made much of. With heightened attention comes imagination awaiting the realisation of that which is expected. Talk about cutaneous parasites, or something read about them, is remembered and the imagination gradually materialises itself in the outside world. Material from sebaceous glands, bits of fluff, hairs, crumbs, tea-leaves, etc., become in the patient's mind parasites, and are endowed with particular properties and at length are seen to move. Perceptual processes involve the exercise of mental functions, such as the affections, selection from the environment of particular objects for attention, memory for purposes of comparison, imagination, reasoning, usually implicit, but occasionally explicit, and due balance between these functions. Text-book definitions of abnormal perceptual processes, though useful, suggest too hard and fast a differentiation from delusions. Hallucinations involve errors in processes of judgment and reasoning. If perception may be regarded as the intellectualisation of sensation or, more colloquially, the thoughtification of things, the error may be held to be of a delusional character probably arising from the vitiation of the perceptual processes by some strong uncoördinated affect, manifesting itself in the perceptual rather than the conceptual field.

Owing to the firm belief of patients in the existence of their parasites, various lines of conduct are adopted. Patients tend to withdraw themselves from contact with others, and some reach a stage of almost complete seclusion. Washing, scrubbing, fine-combing, and picking may be carried on till the patient is exhausted, and may reach a point at which dermatitis is caused.

Treatment is unsatisfactory since all that patients desire is some agent which will kill the parasites. They do not agree with the physician that psychological treatment is necessary. It is nevertheless curious that such patients remain content to attend an out-patient department for psychological medicine, as if there was some slight glimmering at the back of their minds that their trouble is "nervous." G. H. and I. J. show that rare phenomenon *folie à deux*. I. J., as the story runs, was infected by G. H., and at any rate shows her hallucinatory ideas and ways of re-acting to the supposed situations.

A NOTE ON CAMPTOCORMIA.

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CAMPTOCORMIA is a neurosis occasionally seen in civil life. It was relatively common during the late war, especially among the Latin races, and there is an abundant French and Italian literature. The malady is the assumption of a gait and posture described by Hurst as resembling that of a stage octogenarian. The body is bent forward at the hips; the shoulders are braced backwards; the head is lifted by extension of the cervical spine. The patient peers upwards and forwards, grinning with fatuity. There are concomitent functional coarse tremors of the head and arms and shaky weakness of the legs with slight knee flexion. On getting the patient to repose on a flat table, both the dorsilumbar flexion and the cervical extension disappear.

This curious malady was described fully by the French neurologists, Joltrain and Souques, in the early part of the war. It was rediscovered again and again by French, Italian, British, and American war neurologists, and among the best accounts is that of Hall. Joltrain's original case was that of a soldier who was buried by earth and debris, so that he experienced acute flexion of his whole spine, partly from "ducking" and partly from debris falling on his back. He was extricated in a terrified condition and was found to be unable to straighten his back. He remained in the hunched-up position for two and a half days, at the end of which time a functional paraplegia suddenly appeared. There was no organic, nervous, or bony disease and treatment restored him to normalcy. Joltrain likened the posture of dorsal flexion with an alert peering head extension to that of a gamekeeper's dog.

From about 50 case records since Joltrain's original paper it is clear that the ætiology varies widely. Trauma to the spine directly or indirectly, emotional shock, and long-standing exhausting fevers all seem capable of provoking the malady. Anon set in a workman after an accident is described by Hurst as "not very rare." The patients are of neurotic stock and there is no organic disease.

One form of treatment was described by Hall. The patient is stretched out on a flat board like a butterfly on a show-card and kept in that position for about 18 hours of the 24. He is securely fastened, and board and patient are bodily moved about from time to time in various planes. A good deal of the 18 hours is at first spent in the prone position, but gradually more and more time is spent in the vertical position. Muscle re-education and massage are carried out at intervals. To get the patient on to his board or frame in the first place an anæsthetic may be necessary. A totally different treatment, by psycho-analysis, was carried out in many war cases by Mme. Rosanoff-Saloff in association with Souques. The prognosis as to complete rehabilitation of the patient would seem to be very good, but many months may be required.

FIG. 1 (Case 1).

I am indebted to Dr. le Fleming Burrow and Dr. William MacAdam, of the honorary staff of the General Infirmary at Leeds, for permission to record the following cases :—

CASE 1.—R. B., aged 35. Is a miner in a poor district, oppressed by vicissitudes. He was first seen in October, 1927, and Fig. 1 is reproduced from a photograph taken at that time. He waddled into the out-patient department smiling happily, but with his trunk heavily flexed forwards. He explained that he was "always a nervous chap," and had been invalided out of the army for shell-shock in 1917. His reason for seeking advice was a diffuse backache, and particularly inability to "straighten out." The disability was of 12 months' duration and followed a long and severe attack of influenza. He had had no injury. He complained of difficulty in walking on account of his backache and flexion, but he gave his history with happy zest. The site of the pain was mostly in the lumbar column, and palpation there caused immediate full spinal extension with quick resumption of the bent forward attitude after a few seconds. He took up a prone position on a couch quite gaily and easily, and when the examination was finished he jumped briskly to the ground. General and radiological examination was quite negative for organic disease, and re-education by various methods brought about relief.

FIG. 2 (Case 2).

CASE 2.—K. S., aged 32. Described himself as "neurasthenic for years." Had suffered from shell-shock. In April, 1927, he fell ten feet from a scaffold and "landed" on his back. He was in bed for 14 days on account of pain and bruising. On getting up he found himself unable to "straighten out." A radiological examination and general physical examination did not disclose organic disease. He conformed very closely to Hurst's description of the "soldier walking painfully and slowly with the aid of two sticks, bending far forwards, his arms and legs often shaking with the effort, for all the world like a stage octogenarian." Fig. 2 is from a photograph taken at the time, but the blissful grin cannot be reproduced, in deference to the patient's wishes. He is getting better under a régime modified from that of Hall.

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Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ORTHOPÆDICS.

A MEETING of this Section was held on April 3rd, with Mr. W. ROWLEY BRISTOW, the President, in the chair, to discuss the

OPERATIVE TREATMENT OF RECENT FRACTURES OF BONE.

Dr. CHARLES SCUDDER (Boston, U.S.A.) read the opening paper. He said that the subject was important for several reasons. The whole patient was damaged, as well as the bone; it was necessary to decide immediately on the course of treatment to be applied throughout, and unsatisfactory traditional and detached ideas of fracture treatment were very generally prevalent. Again, the initial treatment might stupendously affect the subsequent course of events and every general practitioner could understand and apply a simple, effective, primary treatment. The standard of result set 30 years ago was unsatisfactory to-day to the patient, his family, his employer, and the insurance agent. Moreover, the type of fracture had changed. There were more multiple fractures, more complicated joint involvements, and greater damage to bones and soft parts. The annual loss to industry from badly treated fractures was estimated at millions of dollars. The operative treatment of fractures, resting as it did upon the principles evolved by Lister, stood to-day on a fundamentally sound basis. Surgeons should strive more energetically for anatomical perfection which meant a nearer approach to functional perfection and the prevention of sequelæ due to inaccurate replacements. It was dangerous to advocate incomplete reduction in an adult; to live habitually in an atmosphere of surgical compromise was stunting to progress and likely to develop surgical cynicism. The desirability of anatomical reposition and the use of X rays called more and more often for direct operative approach. Bone was no longer regarded as a dry, inert, stable, terminal form of matter serving as the passive framework of the body. It was flexible, living, unstable, changing tissue—an active organ, intimately associated with the vital processes of the body and sensitive to all extraneous influences and events. It was a delicate tissue demanding great consideration and gentle handling. This view of bone emphasised the importance of immediate and exact reposition of fracture fragments, so that the reparative process would be least interfered with and ideal union accelerated. A fracture was an injury to a

complicated intelligent mechanism, and the recovery of the normal functioning of the whole organism was at stake. The will was involved in every fracture and influenced the recovery of function; the earlier the will coöperated in securing return of function the more rapid and complete was the recovery of the individual. There could be no rigid rule as to the time of union of a fracture, and the parts could be moved as soon as movement would not disarrange the replaced fragments. Absolute fixation by operation secured the minimum of callus necessary for sound repair, and allowed early movement without disturbance. Operative treatment of fractures was logical, natural, and had come to stay.

Indications for Operation.

Granted skilful surgery and anæsthesia and the necessary apparatus, the important indication for open operation was that it secured an earlier return to a more nearly normal function than any other form of treatment. This did not mean that every fracture should be operated upon. Operative advance should be safeguarded, and limited to skilled surgeons in hospital surroundings. Each case was a problem by itself, dependent on the exercise of the highest type of surgical judgment. The surgeon must have an adequate knowledge of the patient, physically, mentally, industrially, and socially, and of all the conditions. He must have perfect instrumental, mechanical, and physical equipment, an accustomed and proved technique, an understanding of the nature of bone tissue and its reactions, experience of both operative and non-operative procedures, and an open mind in selecting the one best adapted to the case in hand. No other surgeon should employ the operative method. The time to worry about the outcome of fracture treatment was in the first two hours after injury. Adequate immediate treatment would do much to prevent difficulties. Among fractures never operated upon were Colles's fractures, fracture of the clavicle, and many occurring in childbirth, childhood, and adolescence Fractures usually operated upon were fractures of the great tuberosity of the humerus with displacement, of the surgical neck of the humerus with dislocation, of the olecranon with separation of the small fragment, of the head or neck of the radius with sufficient displacement to limit movements, and of the shaft of the radius with displacement of the ulna. Most surgeons also operated upon separated or displaced epicondyles of the humerus or femur, certain elbow-joint fractures, and oblique or spiral fractures of the tibia and fibula, displaced fragments of the patella, irreducible fracture of the femoral shaft, fractures of the os calcis in which the line of fracture entered the astragalo-calcaneal joint, certain metacarpal and metatarsal injuries, and fractures about the ankle-joint which were difficult to hold. Operation was very doubtfully applicable for fractures of the spine with immediate symptoms of transverse lesion of the cord, fractures of both bones of the forearm, and of the humerus above the middle. Proper traction on the femoral condyles, tibial crest, or malleoli, or through the os calcis, might diminish the necessity for operation.

Almost any fracture of the neck of the femur entered the capsule, and the treatment of election was traction under general anæsthesia, with internal rotation, abduction, and hyperextension. Sixty per cent. of cases at the Massachusetts General Hospital had secured bony union by this method. There was no way of identifying the other 40 per cent. in advance, but careful study of the skiagram would show that the neck was being absorbed and that union would not take place. The second choice was the reconstruction operation rather than pegging. Cotton, of Boston, believed in artificial impaction instead of abduction. He put his stockinged foot into the injured groin and pulled until both legs were of equal length. Then, inverting the leg with the pelvis supported, he put a double piece of Sadler's felt over the great trochanter and hit it with a wooden mallet. His results were satisfactory. Delbet, of Paris, pegged practically all his adult cases and got union in 50 per cent. I another Paris clinic a bone-graft was placed on th neck of the femur with surprising accuracy by special piece of apparatus.

Advantages of Opportunism.

Sir ROBERT JONES (Liverpool) said he was please to note that though Dr. Scudder was, at the beginnin a strong advocate of the purely operative metho he yet encouraged perseverance with non-operativ measures. For himself, he did not like to feel that h belonged to any one "school," because he was sur the truth did not remain in any one of them, an probably not in all put together. So very muc depended on the surgeon who saw the case—on wha he could do and what he could do well. At one tim plating and wiring had been carried to extremes he had once removed a plate from a child 6 month old, and they had often had to be removed becaus they were beginning to give trouble after two o three years. This had led to a reaction to the othe extreme. Dr. Scudder said that in cases of fractur of the femur it was necessary to operate in order t secure perfect anatomical reposition. But everythin depended upon which was the good and which wa the bad type of union. In the femur end-to-en apposition was good, but if there was very sligh deflection it was bad. A slightly overlapping fractur if in good alignment, was a better result than a end-to-end apposition which had been allowed t cant to one side. He had seen cases in which platin had been done and this point had obviously not bee remembered. In the treatment of fractures of th femur the good results were attained by gradua extension rather than by immediate reduction. Tha was the great difference between the direct operativ attack and the attack made by other means. H agreed that spiral fracture of the tibia often require operation, especially when there was also shortenin Sometimes a spiral fracture, with one end riding ov the other, looked very bad by X rays, but was no really unsatisfactory, since by rotating the ank good apposition could be obtained. Sometime fracture of the forearm was very difficult to dea with, especially when the radius came in contac with the ulna, but out of thousands of cases he di not remember more than a dozen in which he had ha to operate. Reduction had to be very carefully carrie out. Operation was required for fractures of th scaphoid. Here the main trouble was dorsiflexion and sometimes there was limitation of flexion of th wrist. His first act in these cases was to increase th deformity, putting all the pressure he could on th scaphoid and semilunar to force it back. If, clinically he got an easy movement of dorsiflexion, he con sidered the case would do well. Otherwise he di not hesitate to cut down at once and remove th obstructing bone. That was much better than delayin operation for weeks or months, for then success wa only partial. For fractured patella in a young ma who wanted a freely movable joint he would alway operate by stitching rather than by putting in plate or pegs or wire. He would not do this in the ol and feeble. It was common to see Pott's fractur plated, although, if seen early, it was one of the easie forms of fracture to manipulate. Whatever metho of treatment was adopted, accidents such as ischæmi paralysis might occur, and many cases arose in th law courts because the operator, not having had th possibility in mind, had omitted to warn the patien

Anatomical Reposition.

Prof. HEY GROVES (Bristol) said it was an accepte principle that operative treatment was indicate when conservative or non-operative methods ha failed. It must be considered, however, what const tuted satisfactory anatomical reposition by no operative methods, and what were the cases whic should be operated on without wasting time on oth methods. He thought the advocates of operativ treatment had gone a little too far in stressing th need for complete anatomical reposition. His vie was that if the length of the bone and the alignmen

were correct, slight lateral displacement was of comparatively small importance so long as contact between ends of the bone was secured. Other things being equal, he was convinced that cases treated by non-operative methods showed a more rapid and a firmer union, with a quicker return to function, than did those submitted to operation. After the ordinary plating operations there was a very slow growth of callus, and union of the bone was tardy. Open fracture was to many surgeons a strong lure towards operation, but often this treatment was followed by great delay, if not indeed by disaster.

To decide which were the cases in which conservative methods were only waste of time was largely a matter of experience and observation, but he would say that fractures in the neighbourhood of joints in which the fragments could not be placed in accurate apposition by manipulation came into this class, as did also fractures of the forearm, and particularly of the radius with ulnar deviation of the distal fragment of the radius. He would also place in this category fractures of the olecranon and patella with wide separation, and fractures of the true neck of the femur in young and vigorous persons. Experience showed that it was usually impossible to bring about accurate reposition of bone without suturing the bone at all. The simplest method was the non-operative manipulation of the bones together, impacting them under the guidance of the fluorescent screen. There were cases in which this could not be done because soft tissue was interposed between the bones; and in those, following skeletal traction, open operation should be done, the bones being fitted together after obstructing tissues had been removed.

Treatment of Some Common Fractures.

Mr. H. A. T. FAIRBANK said that the difficulties of the student and the practitioner arose not so much from ignorance of broad principles as in their application. He should be cautious in deciding without assistance. The surgeon should always keep in mind the enormous difference between operating in the first week and after the lapse of (say) six weeks. This was especially important with fractures involving joint surfaces. In these absolute perfection in the anatomical result of operation was essential, and might be unobtainable unless the fracture was quite recent. Fractures of the shaft, on the other hand, could be operated upon satisfactorily almost at any time. The day of election for operation was, he suggested, the fourth.

Referring to some of the commoner fractures, Mr. Fairbank said that almost the only indication for operation in fracture of the shaft of the *humerus* was damage to the musculo-spiral nerve. With an internal or external condylar fracture, if there was displacement to more than a minute degree, operation should be performed. In external condylar fracture, which was by no means rare in children, the fragment might be rotated by more than 90°, a condition often unappreciated. In supracondylar fracture, if the usual displacement was complete and could not be reduced by manipulation, he thought open operation advisable, provided it could be done within a week of the injury. When six weeks or more had elapsed gross displacement was far better left alone. A nerve lesion should be regarded as one factor in favour of open operation; but when displacement was slight or had been already reduced, a nerve lesion, per se, was not an indication for immediate operation. With fractures of the head and neck of the *radius*, "when in doubt operate." If the head was completely loose it should be removed, but if the periosteum was largely intact the deformity should be corrected and the head should not be removed. Most cases of fracture of the shafts of the *radius* and *ulna* should be operated on if there was overlapping. Colles's fractures only required open operation when they were united in bad position and could not be refractured. Separated epiphysis demanded the same treatment, but this was not so imperative for a relatively small degree of tilting. The displacement that really mattered in a Colles or separated epiphysis was backward tilting; it might be disastrous to function. Moderate backward displacement without any tilting was of no functional importance.

In fractures of the neck and shaft of the *femur*, operation was rarely required if treatment was properly carried out. Plating of the shaft of the femur was advisable, without an attempt at conservative measures, when the soft parts below the knee were damaged or when there was a second fracture in the limb. In the lower third—admittedly more difficult to treat—operation was more often advisable, especially with separation of the lower epiphysis with displacement. In fracture of the femoral condyles operation was imperative if the displacement was more than very slight. The tibial tuberosities were extremely difficult to deal with by open operation, and if fair accuracy could be got by manipulation the fracture was best left alone without operation. Fractures of the shafts of the *tibia* and *fibula*, on the other hand, were very favourable for operation. Want of apposition of fragments was in itself sufficient reason for operation, while overlapping of more than ¼ in. in oblique fractures made it imperative in the absence of contra-indications. "In transverse fractures of both bones with complete disengagement of fragments, operate every time," said Mr. Fairbank, "however slight the overlap may be to begin with." Oblique fractures, if requiring operation at all, should be plated; the transverse usually required no internal fixation.

More than any other joint, the ankle needed absolute accuracy. The lower the oblique fracture in the fibula, the more likely the need for operation. In the young active adult comparatively slight displacement would give a considerable percentage of imperfect results unless operated upon. In those of the third degree operation was much more often advisable, and should be resorted to without hesitation, even in patients somewhat past middle life. In cases of all sorts the slightest outward tilt of the astragalus demanded operation if it could not otherwise be corrected. Backward displacement of the foot must, of course, have been entirely overcome.

Organisation of Treatment and Research.

Mr. W. A. COCHRANE (Edinburgh) said that, in the main, he was in agreement with Dr. Scudder's conclusions, but he thought such discussions as this would be futile until a definitely improved organisation was available. In this direction the Committee of the American Medical Association had done much, for they had encouraged the setting up of centres for the treatment of fractures in hospitals, had improved the teaching of students, and had ascertained the end-results with different methods. The problem now being discussed was one which varied with the particular person who had to look after the case. There were certain fractures which should be operated upon, particularly those in or around joints. Another kind which should be operated upon was that typified by fracture of the lateral condyle of the humerus. Many of these cases were not well controlled by X rays. There was apparently good reposition, but by non-operative means one could not bring about good reduction. In many of the more comminuted fractures which passed into joints he thought it would be well to combine the operation with immediate arthrodesis. For fractures of the diaphyses he agreed that non-operative means should be employed almost wholly. But when time had elapsed a selection must be made. In some cases of spiral fracture of the tibia operation was required. Non-operative methods had proved of great value in diaphyseal fracture, but operations had a definite place in articular and juxta-articular fractures. As a rule, there was no need to fear infection.

Mr. P. B. ROTH thought that operation should always be performed if there were displaced fragments which could not be reduced in any other way. And when operation was needed it should be done as soon as possible after the accident; even in fractured patella he would operate on the following day. The

presence of blebs, if they had not broken, was no bar to operation. Always operation should be done for fracture of the spine of the fibula; also in fractured lower end of the fibula when there was dislocation of the foot backwards. If a fracture could not be reduced under the first administration of an anæsthetic he thought it a waste of time to try again in the same way. He had had many fractures sent to him which had been left untouched because they were compound. He submitted that it should be regarded as an aphorism that displaced fragments must be replaced, even if to do so required an open operation.

Mr. McCRAE AITKEN desired to emphasise the point, made by Dr. Scudder, that it was very important to treat bone as a living structure and not as a mere skeletal and terminal framework. This would greatly help a right conception of what happened when treatment was aided by the use of foreign bodies.

Dr. J. B. MENNELL pointed out that the presence of synovial fluid between fragments inhibited the formation of callus; in joint fractures—particularly at the head of the radius and the lower end of the humerus—a good result could be got by means of movements from outside without fear of anything unpleasant happening.

Dr. SCUDDER, in reply, reminded his audience that fractures had been treated for thousands of years in much the same way as they were being treated to-day, and without, in many instances, reference to fundamental principles. He wished to leave the impression that as a result of a very long experience in this matter, and the experience of the last few years in particular, the profession now stood on very solid and dependable ground, so that it could be said that fracture cases were now being taken care of better than years ago, because practice was based upon agreed fundamentals. The keynote of the situation was struck by Mr. Cochrane; individuals must get together and coöperate, sit at a round-table conference, and compare experiences. This process had been greatly neglected in the past, but a good start had now been made, and he hoped such centres of surgery as London, Bristol, and Edinburgh would get to work on it. The experimental work of Mr. Hey Groves had done much to advance knowledge of fractures. For adequate discussion it would be necessary to pool issues and experiences. It was most important to know accurately what were the actual functional results. He contended that at present the trustees of hospitals were not carrying out their trusts properly in the matter of running the machinery which was to take care of the poor.

SECTIONS OF WAR AND OTOLOGY.

DISABILITY FROM MIDDLE-EAR DISEASE.

ON April 13th these Sections met jointly, with Group-Captain H. V. WELLS in the chair, to discuss the Effects of Middle-ear Disease on Efficiency in Civil and Military Life.

Wing-Commander DAVID RANKEN said that the possible complications of middle-ear disease included recurrent earache, difficulty of hearing, otorrhœa, tinnitus, vertigo, and intracranial complications. Recruits having poor auditory acuity were naturally unsatisfactory, and a cold sufficed to impair it further. Often accused of inattention, these subjects complained that they were passed over when promotions were made, whilst a man liable to vertiginous attacks would not be chosen for positions of danger. The bad effect of this disability on general health accounted for frequent charges of malingering. Flying officers liable to unilateral or bilateral Eustachian obstruction might develop, especially when descending from a height, such severe middle-ear and labyrinthine symptoms that they lost control of their machine. In the Services one view was that men with intractable middle-ear disease should be invalided out; another was that, in view of the expenditure already incurred in training them, efforts should be made to bring about a cure.

With regard to the important question whether the aural standard of recruits was to-day too exacting, Wing-Commander Ranken submitted a table showing that, in 1922, 4·6 per cent. of the rejections of recruits for the Royal Air Force were due to aural disease, the corresponding percentages being 9·2 in 1923, 7·7 in 1924, 9·3 in 1925, and 5·4 in 1926. The average for all the years was 7·4 per cent. As a result of his experience in the R.A.F. since its inception, he did not think the present standard too exacting; indeed, in some respects the conditions were not sufficiently strict. Most of the middle-ear trouble had begun before the recruit entered the Service. Eight years ago he had recorded the result of the examination, by aural experts, of nearly 50,000 aviation candidates, only 2·8 per cent. of whom were excluded on account of aural disease.[1] In a peace-time army he thought there was only one way of obtaining aural efficiency—namely, by excluding all who had had chronic aural disease or who had an upper respiratory tract of the type which yielded a large percentage of aural trouble. This had been done in the R.A.F., and now the amount of aural disease in the flying personnel was negligible. Only those medical officers should be employed on recruiting who had had training in the examination of nose, throat and ear.

The question remained whether conditions should be relaxed in the event of another great war. If so, what alteration should be made? The debatable cases would be those with chronic suppurative otitis media, with or without defect of hearing, who were otherwise healthy. Here the decision should rest largely on the presence or absence of symptoms over an immediately preceding lengthy period. The work being done in school clinics, and the increase of aural specialists in hospitals must lessen the sum total of cases of aural disease, and so produce a higher physical standard among the general populace.

Mr. SYDNEY SCOTT quoted figures issued by the Metropolitan Life Insurance Company of New York, to show the serious economic loss due to aural disease in America. Some limited defect of hearing was very common in the community. If hearing was normal, the residual whisper should be heard at a distance of at least 20 ft., with each ear separately. Mr. H. J. Banks-Davis, who had had much experience in testing candidates for the Civil Service, had given him the following brief indications of the basis on which he worked. As a rule, deafness in only one ear need not disqualify, nor should the accidental rupture of one tympanic membrane. When middle-ear disease had been radically cured by a mastoid operation, an ordinary certificate could be considered six months afterwards. Cases having a history of suppurative otitis media could be given a special recommendation for two years if the condition was inactive at the time. Ineligible persons, Mr. Banks-Davis considered, were those with marked deafness in both ears, suppurative otitis media (if active at the time of the examination), or deafness which was probably progressive. Candidates for the post of Officer of Customs and Excise and in the telephone and telegraph services must have normal hearing. It was important that every defect discovered in the ears of an applicant for service in Army or Navy should be carefully recorded, especially in an otherwise eligible man. A large number of men in the war had aural disorder at enlistment, and many had discharging ears for years, yet a large proportion of these were good and efficient soldiers. It was difficult to separate them from those who had sustained actual damage to the ears in the war. People with a certain degree of otosclerosis heard very well in a noise, and some heard particularly well when the flying-machine was in the air. Men having perforation on both sides did successful flying in the war, and they did not suffer from giddiness, however quickly they might dive. Such cases would be excluded when recruiting in peace-time, but this rule might well be relaxed in war-time.

[1] THE LANCET, 1920, i., 800.

Major W. T. HARE showed by a series of tables and graphs that in a time when it was more difficult than ever to attract recruits an increasing number were being rejected at the medical examination, the increase being partly due to aural disease. Therefore the Army medical authorities had seriously to consider whether the present somewhat stringent regulations concerning recruitment of men with aural trouble, but without accompanying deafness, could not be modified. He adduced a number of reasons for a lowering of the present aural standard. Recently the standard had been that no recruit should be accepted who had any of the following defects: deafness, aural discharge, perforation, radical mastoid operation, dermatitis of the meatus, conditions preventing a good examination of the drum after removing the cerumen, and conditions which had been associated with recurrent headache, deafness, tinnitus, or vertigo which could not be accounted for by the state of the upper air passages. A further reason for asking an easing of the standard was that the examination presumed an expert otological knowledge which many examiners did not possess. Of recruits discovered to be suffering from aural disease or its effects, in less than 10 per cent. was aural deficiency suspected, because most of the men were able to hear orders on parade. In nine out of every ten men having aural defect the condition was present on enlistment, but it might arise in the Service as a result of bathing parades, boxing, exposure to gun-fire, and other causes. Only one ear, nose and throat specialist was employed in each Command, and he had more work than he could conveniently cope with. If more men with aural lesions were likely to be accepted in the Services, it was very important that medical officers should have received special aural training, so that they could take their share of the additional work.

Mr. T. B. LAYTON emphasised the vast difference, in such a question as this, between the circumstances of peace-time and those of a great war. He considered that deafness, giddiness, and an aural discharge ought to be adequate reasons for excluding a recruit. In connexion with giddiness, the important point was the danger of malingering, which could be divided into subconscious malingering and deliberate attempts at deception. If a man had complained of giddiness, it was impossible to insist upon his going back to duty. There was a dread lest persons with discharging ears should develop meningitis, but this was a thing which rarely happened. Active chronic suppurative otitis media was very different from the residual form, which was simply evidence that at some time there had been active disease. He did not see why the latter cases should not be accepted; they were no more liable to acute infections and acute mastoid disease than ordinary people. The radical operation or the modified radical should not be done, he thought, on men while in the Service, as there was always liability to a further breakdown. He concluded by laying stress on the great importance of every recruit being aurally examined, and agreed with Major Hare that more otologists were required in the Army.

Mr. T. RITCHIE RODGER spoke of the relationship between suppuration in the middle ear and deafness in the internal ear due to excessive noise. Some text-books stated that middle-ear disease predisposed to occupational deafness, and therefore examiners of recruits in certain branches of the Services were inclined to at once reject any man who had any middle-ear defect, as he was considered to be more vulnerable to the effects of gun-fire. He wished to insist, however, that so far from middle-ear disease conducing to gun-deafness, the opposite was true; most middle ear conditions were a protection against noise-deafness. Injurious sound waves reached the cochlea by way of the tympanum, not by bone conduction; therefore anything which reduced or damped the normal conducting power of the tympanic membrane and the ossicles would lessen the injury to the delicate nerve-endings of the cochlea. The prevention of noise-deafness was to be achieved by the regular blocking of the external auditory canal, as by vaselined wool, jeweller's wax, celluloid, or rubber. This measure should be obligatory.

Surgeon-Commander J. A. MAXWELL spoke of the prevalence of middle-ear disease in the Navy, which was high in comparison with the total invalidism, higher figures being reached only by diseases of stomach and intestines, catarrh, venereal disease, and injuries. In one year, however, there were only three deaths from aural disease in the Navy. Chronic otitis media, which occurred as a recrudescent disease in older men, should be regarded as a cause of invaliding sine die. Nerve deafness was, in his experience, uncommon; when internal nerve deafness was found, it was due to syphilis more often than to gun-fire. Traumatic rupture of the tympanum was rare. He did not consider that the present Army standard for hearing was too exacting. Abnormalities in the nose and throat should be searched for, as conditions on a modern warship imposed a great strain on the recruit; hence there should be a number of expert medical officers at sea. He felt sure that the increased attention to dental conditions would greatly lessen the septic diseases encountered in the ear.

Sir JAMES DUNDAS-GRANT said that a perforation situated centrally or near the anterior part of the membrane, with a mucous discharge rather than one thickly purulent, was comparatively harmless. It was quite otherwise when the perforation was in the postero-superior segment, close to the attic and aditus. The otologist at the front should realise that a man with cholesteatoma, in esse or in posse, was in a more dangerous position than one who had a perforation lower down. Referring to Mr. Rodger's remarks, he said that Moure, of Bordeaux, had shown that men with nasal, naso-pharyngeal, and throat trouble were more liable than others to suffer from concussion-deafness. Everything pointed to the need of routine otological examination, and it was to be hoped that the authorities would recognise it.

Colonel P. H. HENDERSON said that it had been very disappointing, in 1918, to find that out of every nine men of military age only three were really fit; and even with the present voluntary Army the standard of health was apparently not much better. If the numbers required for the Services were not forthcoming, the physical standard for admission must be lowered. It had been shown that from 30 per cent. to 40 per cent of the children attending school suffered from some physical defect. Yet the Expeditionary Force which went to France in the recent war was admittedly the finest which had ever left any country. In 1923, 323 men were invalided out of the Army on account of suppurative middle-ear disease, 128 for "ordinary middle-ear disease." There was not much evidence supporting the idea that aural trouble greatly reduced men's capacity as fighting soldiers. The middle-ear disease which followed influenza was more amenable to treatment than other forms.

Mr. A. R. TWEEDIE said that of the men who formed the successful force at Gaza 15 per cent. had chronic suppurative otitis media. In peace-time he thought that, if possible, every man who had an intranasal, a postnasal, or an aural lesion should be excluded. And he was pleased to hear Mr. Sydney Scott stress the importance of rhinitis.

Mr. LESLIE POWELL, discussing the question of aural disease before the recruit was accepted for service, said it was hard if a man, having been accepted as fit and continued in the Service, was denied his full pension after the war because it was sought to prove that he had had disease from the ear before becoming a recruit.

Dr. J. H. MACDONALD said that the recruiting figures for the Royal Air Force had not varied greatly in the last few years as regards rejections for aural disease. He agreed with Wing-Commander Ranken that there seemed no reason to alter the standard of examination for ears; the number of recruits required could be obtained, and in an emergency the subject could be reconsidered. In that branch of the Services the system of examination was a

centralising one, and it was easy and convenient to get specialist advice when it was needed. He looked forward to a time when preventive medicine will have made unnecessary so much examination of candidates wishing to enter the Services.

The CHAIRMAN, summing up briefly, said the view which had been expressed that most of the aural disease in the Services was present before enlistment coincided with the view held by the Service medical officers. It needed careful consideration.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society on April 5th, Dr. THOMAS FRASER, the President, in the chair, a paper on

Basal Metabolism in Clinical Medicine

was read by Dr. ALEXANDER LYALL. After referring to the earlier work of the physiologists, he proceeded to describe the method commonly used for calculating the basal metabolic rate (B.M.R.) in clinical practice. The data necessary were the height and weight of the patient, the total volume of expired air over a known experimental period, and the respiratory quotient and oxygen-consumption during the time of estimation. Under suitable conditions uniformity of results was achieved by this method. In one mild case of exophthalmic goitre where the estimation had been carried out four times at intervals of a month the oxygen-consumption had been 254, 251, 255, and 258 c.cm. per minute, with the respiratory quotient about 0·82 on each occasion. The experimental error in the method was about plus or minus 8 per cent., but Dr. Lyall believed that the error tended always to be towards the upper side. Thus a B.M.R. of plus 10 per cent. was within normal limits, whereas a B.M.R. of minus 5 per cent. showed a degree of reduction from which diagnostic inferences could be drawn. Dr. Lyall had investigated by this method, once or repeatedly, a series of 45 cases of exophthalmic goitre. The B.M.R. was increased by 15–30 per cent. in 14 cases, by 30–60 per cent. in 22, and by more than 60 per cent. in 9. The highest rates were plus 87 per cent., plus 97 per cent., plus 100 per cent., and plus 105 per cent. Three of these four severe cases had auricular fibrillation, the patient with the highest rate being a typical case of the fulminant type of the disease. Generally speaking, the group of cases, classed as mild by estimation of basal metabolism, were those likely to become good civil lives within a reasonably short period of medical treatment alone. The cases in the group of moderate severity were likely to stand operation well if there was no other contra-indication. The group with B.M.R. above plus 60 per cent. made poor surgical risks. Additional factors which should be taken into account in considering the operative risk were as follows: (1) there should be no organic heart disease; (2) the blood-urea should be below 50 mg. per 100 c.cm.; (3) the patient should have already regained half the previous loss in weight; (4) the blood pressure should not be higher than 140 mm. Hg systolic and 70 mm. diastolic; (5) the patient should have already regained a fair measure of self-control. In nine of the cases in which glucose-tolerance tests had been carried out, the blood-sugar curves showed inability to deal properly with glucose. The condition should not be confused with true diabetes, although three cases of diabetes mellitus occurred in this series. Eleven cases of myxœdema had also been investigated, the B.M.R. varying from minus 3 per cent. to minus 42 per cent., the average reduction being 14 per cent. In four of these cases exophthalmic goitre had previously been present. A series of cases of toxic adenoma of the thyroid and simple adenoma had shown that the B.M.R. was raised in the former group of cases but not in the latter. In the goitre of puberty the B.M.R. was not increased. The estimation had not been found of value in the diagnosis of malignancy of the thyroid gland.

Reviews and Notices of Books.

RECENT ADVANCES IN MEDICINE.

Fourth edition. By G. E. BEAUMONT, M.A., D.M. Oxf., F.R.C.P., D.P.H.; and E. C. DODDS, M.D., Ph.D., B.Sc., M.R.C.P. Lond. London: J. and A. Churchill. 1928. With 48 illustrations. Pp. 426. 12*s.* 6*d.*

SINCE the appearance of the third edition in 1926 several important additions have been made to this invaluable work. One of the chief of these is a section on the diagnosis of spinal cord compression. Although, normally, the fluid of the cisterna and that of the lumbar spine has the same composition and exhibits similar pressure variations, changes in these factors may occur above and below a block. The cisterna is tapped by Ayer's method, and a lumbar puncture is performed simultaneously; if a spinal block is present, withdrawal of fluid by lumbar puncture will not affect the cisternal pressure, nor will gentle compression of the jugular veins raise the lumbar pressure. The stagnation of fluid below an obstruction causes certain chemical changes, known as the "loculation syndrome"; the protein increases from 0·02 per cent. to 3 or 4 per cent., the fluid has a yellowish tinge due to blood pigment from the congested meningeal vessels, and spontaneous clotting occurs owing to the increase of fibrinogen. In addition to this method lipiodol may be injected into the cisterna and the spine photographed under X rays. A splendid picture illustrating a typical block is given.

A section on the parathyroids sketches the history of research into these glands, and describes the work of Collip, in 1925, in his successful search for a potent extract. The chief use of this is to control the tetany which follows thyroparathyroidectomy; the dosage is still uncertain, but it appears that five units per kilogram of body-weight will raise the blood calcium to normal limits in 24 hours, and much less will maintain it at the normal level. The extract is also effective in other conditions involving a decrease in the blood calcium, such as infantile tetany, but in tuberculosis, although it will relieve some of the symptoms, it is of no fundamental value. The excretion of calcium from the bones which follows its administration is accompanied by an excretion of lead in patients suffering from plumbism, and Hunter and Aub have found the extract valuable in the treatment of this condition. They regulated the dosage by the blood calcium, maintaining its level slightly above normal for varying periods. This drug is a very potent one, and only suitable in selected cases and under adequate laboratory control.

The chapter on the heart has been enriched by a description of the action of quinidine, the understanding of which depends upon a grasp of the "circus" movement that manifests itself in auricular flutter and fibrillation, instead of the radial path pursued by the wave of excitation in the normal heart-beat outward from the sino-auricular node. The circus movement depends upon the presence of a gap of excitable muscle between the head and tail of the wave, and to close this gap stops the movement. Quinidine will lengthen the refractory period of the muscle and so tend to stop the wave, but it may also slow the rate of conduction of the impulse and so perpetuate the movement; which effect it will have depends upon the individual patient. It restores normal rhythm in 50 per cent. of cases, but obviously has very definite dangers. A paragraph on the administration of digitalis by cat unit tablets has been included, and the electrocardiogram of acute thyrotoxicosis is compared with that of physiological tachycardia. In addition to these changes nearly every chapter has been revised and brought up to date. The book was first written as a link between clinical and laboratory workers, as an instructor to the aspirant towards higher medical examinations, and as a stand-by to the busy general practitioner. Its virtue is that it records the practical experience

not merely the theoretical learning, of its authors, and its influence in the propagation of modern knowledge has been, and doubtless will continue to be, very large.

SURGERY OF MUSCLES AND TENDONS.

Die Chirurgie. Eine zusammenfassende Darstellung der allgemeinen und der speziellen Chirurgie. Edited by Prof. M. KIRSCHNER, Tübingen, and Prof. O. NORDMANN, Berlin. The 21st Instalment being Vol. II., Part 2, pp. 867–1104, containing the Surgery of Muscles, Tendons, and Fasciæ, by Prof. W. MÜLLER, Marburg (Lahn). With 108 illustrations in the text and 16 coloured plates. Berlin and Vienna: Urban and Schwarzenberg. 1928. M.17. (Not sold separately.)

THIS instalment of a comprehensive work on surgery begins with the surgery of muscles and includes articles on their normal anatomy and physiology, on their repair when injured, and on free transplantation of parts of muscles, to repair defect or to check hæmorrhage. Degenerative and inflammatory changes in muscles and parasitic affections such as trichinosis or echinococcal disease and tumours, may call for surgical interference, but when the author comes to contracture of muscles and traumatic affections we are on more familiar ground. Ischæmic contracture is fully discussed, though the practical treatment of late results is treated inadequately and without illustrations. Wry-neck and its treatment, including Rowlands's method of lengthening the sterno-mastoid, has a section to itself. The greater part of the instalment, however, is devoted to the surgery of tendons, which is described very fully with the aid of illustrations in the text and in coloured plates. Treatment of the results of direct injury to tendons and that of paralysis by means of tendon transplantation are also well set forth. The surgery of fascia as here described mainly consists of the use of that tissue as a means of repairing injuries and defects of other structures and to form sheaths and ligaments. Its use in place of cartilage and synovial membrane in the making of new joints as in arthroplasty is omitted, as that procedure belongs to the section dealing with the surgery of joints.

This fasciculus contains much valuable information, and the diagrammatic illustrations are clear and should be useful guides to those undertaking operations on muscles and tendons. Like most continental works, it pays little attention to British or American research or practice, although so much work has been done in orthopædic surgery of late years by English-speaking surgeons.

STUDIES IN PSYCHOLOGY.

By WILLIAM ELDER, M.D., F.R.S.E., Consulting Physician to Leith Hospital. London: William Heinemann, Ltd. 1927. Pp. 207. 8*s*. 6*d*.

Dr. Elder attempts in this volume to reduce all psychological problems to a physiological basis. He opens with an account of the neurology of the human organism and passes on to consider memory and the affective conative life. Accepting Herrick's interpretation of will as the anticipation of the future environment based upon power of recall, the author finds himself able to hold a modified view of free will. As an orthodox neurologist and a follower of the old associationist psychologies he has very little use for the current doctrines of the unconscious. Consciousness is essential for reasoning, and the attributing of reasoning powers to unconscious promptings and balancing of these promptings as the Freudians do finds in him little response. There follows a useful chapter on sleep, its mechanism and significance. Sleep to the author is an instinct become habit. This is hard to follow in the sense that instincts are themselves hereditary habits called up by requisite environmental patterns. It is merely the conditioning of the sleep by circumstances that may create sleep habits. The rest of the volume is devoted to dreams and the theory of dream symbols. Here the author finds little use in Freud's conception, and is apparently content with the cheese-before-sleep theory of our grandmothers. At the same time he has many pertinent criticisms of the wilder psycho-analysis of our day and his comment is agreeably free of the venom which characterises so much of the so-called scientific attack on Freudism.

Psychology and the Soldier. By F. C. BARTLETT, M.A., Fellow of St. John's College, Cambridge; Reader in Experimental Psychology and Director of the Psychological Laboratory of the University of Cambridge. Cambridge University Press. 1927. Pp. 224. 7*s*. 6*d*.

Mr. Bartlett, who is one of our leading psychologists, tells us in his preface that during the Great War every important belligerent country called upon its psychologists for advice and assistance, and now lectures in psychology form a part of the course of military study at Cambridge. This book is a selection of lectures delivered in connexion with that course. Research has put on a sound footing tests of intelligence, apart from education, and of special abilities, and the author makes clear their underlying principles; he also brings together the results of recent work on training and fatigue. The section on leadership, discipline, and morale offers an excellent example of the practical utility of organised psychological observation, and the classification of sectional leaders in a complicated organisation like an army into three types, *institutional*, *dominant*, and *persuasive*, is not only interesting, but could be read with profit by whoever is concerned with the selection of personnel in any organisation. The section on mental disorders of warfare is weakened by considering these troubles entirely upon the level of consciousness. This may be done by way of simplification or because the author rejects any theory of unconscious processes, though writers on the subject to whom he refers have all found some such theory necessary in discussing their clinical material. The title of the book was determined by circumstances, but it possesses utility and interest outside the military sphere.

LIPPINCOTT'S POCKET FORMULARY.

By GEORGE E. REHBERGER, M.D. London: J. B. Lippincott Company. 15*s*.

THE earlier half of this book is an index of treatment arranged according to disease. The latter half is divided into three parts; the first of these is a summary of the drugs of the United States Pharmacopœia X., the second a summary of those of the National Formulary, fifth edition, and the third gives a number of new and non-official remedies. In all these parts notes are added on solubility, dosage, action, and use. To the English reader the list of proprietary drugs will probably be of most interest. The treatment advised seems generally sound and is certainly compact in form.

JOURNALS.

JOURNAL OF PATHOLOGY AND BACTERIOLOGY. Vol. XXXI., No. 2. Pp. 141. 1928.—Hydatid fluid as an anaphylactic antigen, by C. H. Kellaway (Melbourne). By means of the guinea-pig uterus reaction it is shown that many samples of hydatid fluid contain protein belonging to the host. But, in some cases at any rate, another antigen is present which seems to be a protein derived from the parasite.—Cutaneous spirochætosis due to *Treponema cuniculi* in British rabbits, by D. K. Adams, D. F. Cappell, and J. A. W. McCluskie (Glasgow). "Vent disease" occurs in hutch and wild rabbits all over the world; it is not syphilis but it looks something like it, and the causative spirochæte cannot be distinguished microscopically from *T. pallidum*. It is readily cured by blue ointment or novarsenobillon.—A case of nervous cretinism with histological examination of the organs, by E. C. Eaves and M. M. Croll (Sheffield). Detailed accounts of the anatomy and histology of cretins are not abundant. In this case at 14½ years the pyramidal tracts were still not fully myelinated;

for other details see the original.—Hypercholesterolæmic splenomegaly, by S. C. Dyke (Wolverhampton). A woman with splenomegaly, biliary cirrhosis of liver, chronic interstitial pancreatitis, generalised xanthoma, and a record blood chole terol of 1250 mg. per 100 c.c.m. The spleen gave no microchemical tests for lipoids unless it was first heated, but it contained a great excess of cholesterol on chemical analysis.—The practical application of the direct oxidase reaction in bacteriology, by J. Gordon and J. W. McLeod (Leeds). A new and elegant method of distinguishing the gonococcus in mixed plate cultures.—Causes and sequences in nephritis, by J. Gray (Aberdeen). The author believes, and supports his view with various observations and experiments, that the main cause of common non-suppurative nephritis in man is streptococci. The toxin circulating in the blood is concentrated in the glomeruli by the loss of water which occurs there, and in this way it may rise to a poisonous level till it is diluted again by reabsorption of water in the convoluted tubules. Simple poisons experimentally always cause tubular lesions and not the glomerular damage which can be produced with bacterial toxins and is the primary lesion in man.—The purpura-producing substance in pneumococci and the heritable susceptibility of mice, by W. Mair (London). Pneumococci contain a substance which causes purpura in white mice, especially in a selected inbred strain.—Experiments on the relationship of complement fixation to precipitation, by N. E. Goldsworthy (Cambridge). Complement is fixed in the early stages of precipitation of an antigen by its antiserum depending on the size of the particles.—A precipitinogen obtained from cultures of *B. aertrycke* Mutton, by F. C. Happold (Leeds). A preparation of proteid from broth cultures stimulates the production of precipitins and agglutinins when injected into rabbits.—Experimental monocytosis, by L. J. Witts (Cambridge). Infection with *B. monocytogenes* causes an intense large hyaline leucocytosis; dead organisms have relatively little effect. Extracts of lymphatic glands also excite monocytes.—The two products of thyroid activity, by G. S. Williamson, I. H. Pearse, and H. M. Cunnington (London).—The experimental production of metaplasia and hyperplasia in the serosal endothelium, and of hyperplasia in the alveolar epithelium of the lung of the rabbit, by J. S. Young (Leeds). Extensive metaplasia (including stratified squamous epithelium) of the endothelium of the pleural cavity can be produced by the injection of a mixture of Sudan III. bile-salts and olive oil; the surface alveoli of the lung also show hyperplastic changes.—Blood changes occurring during the course of treatment of malignant disease by lead with special reference to punctate basophilia and the platelets, by R. W. Brookfield (Liverpool). Colloidal lead causes anæmia which is generally quickly regenerated; the characteristic punctate basophilia is due to a degenerative change in young red cells.—The ætiology of hepato-lenticular degeneration; experimental liver cirrhosis; poisoning with manganese chloroform phenylhydrazine bile and guanidin, by E. W. and P. E. Hurst (London). No evidence was obtained experimentally of any connexion between liver cirrhosis and degeneration of the lenticular nuclei of the brain as occurs in Wilson's disease.—Further investigations on selective bactericidal action, by E. A. Cooper and J. Mason (Birmingham). Continuation of the authors' work on "chemical" and "physical" disinfectants.—Pellagra-like lesions associated with deficiency of vitamin B_2 in the rat, by G. M. Findlay (London). Diets which lack the heat-stable component of the complex known as vitamin B lead to the development of a condition as much like human pellagra as can be expected in rats.—Tumours of mediastinum and lung, by T. Shennan (Aberdeen). Most are carcinomas of lung.—The immunity index method of testing antigenic values, by A. T. Glenny and H. Waddington (Beckenham). Periodic Schick tests on guinea-pigs may be used in a variety of ways to measure the efficacy of antigen.—Further notes on spontaneous agglutination of bacteria, by P. B. White (London). The agglutination of bacteria by electrolytes in the absence of specific serum and by non-specific serum may be due to a variety of causes.—The precipitation test in hydatid infestation, by N. E. Goldsworthy (Cambridge). In testing human sera for diagnosis respect must be paid to Dean's principle of optimal proportions.—The cultivation of the gonococcus, by A. Marshall (Khartoum). Agar with red corpuscles.—Book reviews.

New Inventions.

A NEW METHOD OF CUTTING LARGE SKIN GRAFTS.

THIS method of cutting large skin grafts of the Thiersch type, which I designed for plastic surgery at the suggestion of Mr. H. D. Gillies, depends on introducing a flat metal plate (Fig. 1) under the skin

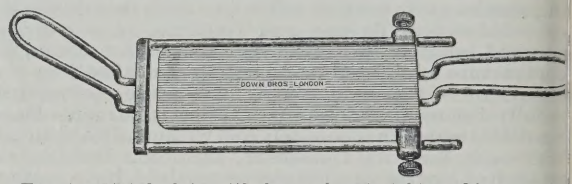

FIG. 1.—Metal plate with frame for stretching skin over it.

and from the flat skin surface produced over the plate shaving off the epithelial layer by a specially constructed knife. The skin and fat is undermined by a large blunt dissector (Fig. 2), the metal plate

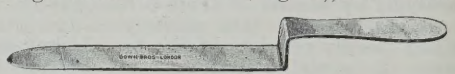

FIG. 2.—Blunt dissector.

being introduced to steady and flatten the skin while it is being stripped of its outer layer. The details of the knife (Figs. 3 and 4), with its attachment to regulate the thickness of the graft cut, are too technical to describe in a short note, but it is sufficient

FIG. 3.—Razor with roller guard.

to say that the knife cannot in any circumstance cut through the skin. The graft is of uniform thickness and its edges are free from serrations. The limits of the mechanism as at present made enable one to

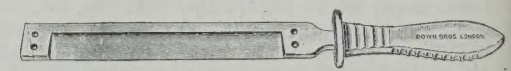

FIG. 4.—Razor with roller removed.

cut grafts from 2 to 4 inches wide by 6 inches in length, depending on the size of plate used; within these limits any predetermined size of graft can be cut with certainty. The only additional wound the patient suffers is a linear incision, through which the plate is introduced under the skin and which is closed on withdrawing the plate.

Briefly the outfit consists of a set of plates of three different widths according to the width of graft desired. Each plate is fitted with an adjustable "fork" which fixes the skin over it, both plate and fork have handles which enable the assistant surgeon to steady it. For each plate, a knife whose cutting edge is 7 inches in length, is fitted with a series of rollers and regulating mechanism, whereby by sawing movement the epithelium is removed.

The device is being made by Messrs. Down Bros, London.

R. LANE JOYNT, M.D., B.Ch. Dub., F.R.C.S. Irel.

THE LANCET.

LONDON: SATURDAY, APRIL 21, 1928.

VOLUNTARY INSURANCE AGAINST SICKNESS.

THE mature student of international social conditions, who looks back to the difficulties that beset his youthful efforts to obtain data on which he could depend, may well congratulate his younger colleagues on the wealth of material so laboriously collected and so admirably presented by the indefatigable workers of Geneva. Information that formerly could be extracted only from a variety of documents, not easy to obtain and certainly not easy to read except by accomplished linguists, is now served up specially prepared for ready assimilation in the publications of the League of Nations and the International Labour Office. In the issue of THE LANCET for March 3rd we had occasion to comment on the monumental study of compulsory sickness insurance issued by the International Labour Office, and the companion volume on voluntary insurance has now been published.[1] Mutual aid among the working classes taking the form of voluntary insurance against disablement through disease or injury is not a new social phenomenon; it can be traced back to the Middle Ages. The craft guilds, to which both masters and workers belonged, made some provision for helping their members in times of disablement, and in the journeymen's guilds, which in the fourteenth century the journeymen, dissatisfied with the craft guilds, began to organise on their own account, this kind of mutual aid was more highly developed. The assistance given took the form of a loan to be repaid when working capacity had been restored. An illustration is found in the following rule of the Fraternity of Bachelor Journeymen of Lucerne in 1560:—

"Every brother who becomes disabled, or falls sick, shall receive the sum of 3½ pfennigs a day if he needs it, but if the Lord restores him to health and enables him to take up his work again, he shall repay the money. If his incapacity is prolonged, and if his needs are greater, money shall be lent to him on security and if he dies the Fraternity shall recoup itself from his estate."

The work begun by the guilds was carried on after their decay and disappearance by other organisations, friendly societies, trade-unions, and employers' welfare schemes; and in the last 50 years it has been much extended and developed; from the Old World it has spread to America, Australia, and South Africa. The proportion of persons voluntarily insured against sickness varies considerably in the different countries, ranging from 1 per cent. in Canada and 1·87 per cent. in Spain to 13·5 per cent. in Great Britain and 14·3 per cent. in Belgium. In Denmark, where there is no compulsory insurance, the proportion of the population voluntarily insured is no less than 57 per cent., but Denmark occupies an exceptional position. The Danes have a genius for voluntary coöperation, and in the field of sickness insurance as in agriculture they have achieved remarkable results without invoking the weapon of compulsion. But the success of the Danish system must to a considerable extent be attributed to the large subsidies from public funds, which amount to about one-third of the total expenditure of the insurance societies. In no other country is assistance given on so generous a scale from public money. In most countries the voluntary insurance societies receive no financial aid from the State, their revenue being derived chiefly from the members' contributions, supplemented by payments, usually on a modest scale, from employers, and by donations, legacies, interest on investments, and receipts from entertainments—in Argentina no less than 35 per cent. of the societies' income is derived from the two last-named sources—but in Belgium, France, Sweden, and Switzerland, as well as in Denmark, valuable subsidies are given to the societies by the central and local public authorities.

It would seem that voluntary sickness insurance tends to develop along the lines followed by compulsory insurance. There is the same tendency towards the organisation of the societies on a territorial basis, the concentration of the membership in a smaller number of societies, and the formation of federations of societies for joint action in negotiating with public authorities, and entering into agreements with doctors and chemists. Similar tendencies may be noted in regard to the benefits given. In voluntary as in compulsory insurance, though with a less rapid development, cash benefits are to an increasing extent becoming relatively less important than the direct provision of medical treatment. Seventy per cent. of the expenditure of the Danish insurance societies is devoted to benefits in kind as against 18·4 per cent. expended in cash benefits. There is a growing feeling that the most important thing to be done for a disabled worker is to restore his capacity to earn wages, and that this end is much more likely to be secured by providing him with the treatment he needs than by the mere payment of money. Treatment benefits have been considerably developed by some societies and include specialist services, institutional treatment, the provision of dentures, artificial limbs, &c. There is also a growing tendency to widen the scope of medical benefits by the inclusion of the dependents of the insured persons. An immense amount of effort is being expended in the promotion of voluntary sickness insurance, but it appears that the prospect for the future is not, on the whole, encouraging. Apart from a few exceptional countries, such as Denmark, voluntary insurance has attracted only a small proportion of the working population. This has been attributed to the natural improvidence of mankind, and also to the insufficiency and precarious nature of the earnings of the low wage workers who are therefore unable to pay regular contributions. But to whatever causes it may be ascribed it seems to be a fact that in most countries a very large proportion of the wage-earners have failed to join provident institutions, and that the failure has been most marked among the poorer workers who stand in the greatest need of assistance in sickness. Moreover, the voluntary societies labour under serious difficulties. Their membership is not constant but tends to diminish considerably in times of economic stress. Their resources, except in the few countries where large public subsidies are given, are limited, and they consequently are at a disadvantage in attempting to make satisfactory arrangements for a good medical service. Their relations with the medical profession in different countries are not always harmonious, and from various parts of the world echoes may still be heard of the "Battle of the Clubs."

Opinion, however, appears to be growing that insurance against sickness cannot be made effective

[1] Voluntary Sickness Insurance: Collection of National Studies. International Labour Office Studies and Reports, Series M (Social Insurance), No. 7. Published in the United Kingdom for the International Labour Office (League of Nations) by P. S. King and Son. 1927. Pp. 470. 8s.

on a large scale without compulsion. This was the decision taken, by a large majority, at the Tenth International Labour Conference in Geneva in June, 1927, and it was confirmed by the International Conference of Unions of Mutual Benefit Societies and Sickness Insurance Funds which was held in Brussels in October, 1927. The decision of the Conference was in the following terms: "The most effective form of systematic provident effort for preventing and remedying the loss of productive power in the workers consists in compulsory insurance, which may be usefully supplemented by voluntary thrift." It would seem that the function of voluntary insurance in the past has been to explore the ground and prepare the way for large national schemes based on the principle of compulsion, and that its function in the future will be to provide means for voluntary thrift supplementing the provision made by compulsory insurance.

PROGNOSIS IN MALIGNANT DISEASE.

THE results of treatment in malignant disease are, on the whole, so unsatisfactory that there is a natural tendency to shirk any attempt at prognosis in individual cases. Every surgeon, of course, can point to instances where his intervention has been completely successful; were it not so, indeed, his task would be intolerable; but he would be the first to acknowledge that his results depend a great deal on factors of which he is ignorant. Of two apparently identical cases, treated in exactly the same way, one may be restored to health, permanently or for a number of years, while the other may terminate fatally in a few months. In attempting to estimate the chances of recovery, the extent of the disease is naturally of the first importance. Involvement of the neighbouring lymph nodes makes the prognosis grave, and further extension makes it practically hopeless. But what is to be said of those cases in which there is no obvious dissemination? It is above all in this group that the position of the surgeon is so difficult. Is he justified in offering the patient the encouragement which is so desirable, or must he still refrain from offering any but the most guarded opinion? Mr. D. H. PATEY and Dr. R. W. SCARFF have attempted to answer the question in reference to that very difficult tumour, carcinoma mammæ, and have brought forward results which are at least encouraging. The number of cases investigated by them is small, being only 50, but, on the other hand, they were all operated on by the same surgeon and were investigated by the same individual, so that variations due to the personal idiosyncrasy of the observer is reduced to a minimum; the period elapsing between the operation and the time of recording the result ranges from three to seven years, which is a reasonably long interval, and the records are complete in every case. In estimating the degree of malignancy of the tumours, they have adopted a histological classification based largely on the work of GREENOUGH, and have relied upon the degree of dedifferentiation of the tumour cells and the apparent rate of growth as evidence of malignancy. After careful consideration of all the available facts the tumours were grouped into three divisions according to the degree of malignancy which they were believed to possess, and were then subjected to analysis in the light of the subsequent clinical histories. It becomes apparent from an examination of the data that the authors were justified in their classification, for their figures show a progressive deterioration in the clinical results as the index of malignancy rises. The duration of the disease before the axillary glands become involved is definitely longest in the group of low histological malignancy, and palliative operations give more prolonged benefit even in advanced cases. It is especially in those cases in which dissemination has occurred, but to a moderate degree, that the value of histology in estimating prognosis is best seen. Of ten such patients belonging to the low and medium malignancy groups, four were alive and well at the time the records were taken, whereas of eight patients in the high malignancy group there were no survivors. It is to be hoped that Mr. PATEY and Dr. SCARFF will continue their work, for it seems to be based on sound lines and to have definite possibilities. The experimental study of cancer has shown that individual tumours differ from one another in their biological characters, their rate of growth, and their behaviour on transplantation. There is no reason to suppose that the spontaneous human carcinomata differ from the experimental tumours in all being built to the same pattern; they also have their individual character which is more rigid and of greater importance than the reaction called forth in the tissues of the host. The amount of stroma and the degree of cellular infiltration are of little value in estimating the growth energy of the tumour. It is the malignant cell itself to which we must look for information, and though it may not be permissible to speak of the correlation of structure to function in the malignant growths it is clear that the structure of a carcinoma has a fairly definite relation to its biological activity.

PUNCTATE BASOPHILIA.

THE nature and significance of the little blue points in red blood corpuscles which stain with the nuclear component of methylene-blue-eosin stains in an ordinary dried blood film have been the subject of a good deal of controversy. Found in small numbers in a variety of abnormal bloods, they have long been known to have a special, though not an invariable, association with lead poisoning, and the whole matter is reviewed in the last number of the *Journal of Pathology and Bacteriology* (1928, vol. xxxi., p. 277) by Dr. R. W. BROOKFIELD, of Liverpool, who has worked at the changes produced in the blood by the administration of colloidal lead in the treatment of malignant disease by Prof. BLAIR BELL. An intravenous dose of lead causes an immediate anæmia by the direct action of the metal on the red corpuscles; to this the bone-marrow responds by regenerating red cells, often very actively, and in consequence the circulating blood shows many immature corpuscles which appear as polychromasic cells in dried films, and as reticulated cells if they are stained wet with a vital stain such as cresyl blue. Punctate basophilic (or stippled) cells appear at the same time, roughly in parallel with the polychromasic cells. Dr. BROOKFIELD produces a variety of evidence to show that stippled cells are in fact polychromasic cells altered by the action of lead. All the stages from typical reticulation to typical stippling can be produced by staining fresh regenerating blood with varying concentrations of cresyl blue, and he quotes the pertinent observation of KEY, who showed that lead poisoning produced less punctate basophilia in normal rabbits than in those whose blood contained many immature red cells as the result of repeated hæmorrhages. It seems, indeed, quite doubtful whether stippled cells occur as such in the circulating blood; several observers have noticed in men and animals poisoned with lead that their number

depended on the precise mode of preparation of the blood films, the quickest fixation giving the least punctate basophilia. These facts are much less easy to reconcile with the view that the stipples are the remnants of a fragmented nucleus, and it certainly seems more probable that they are artefacts due to some action of lead on the red corpuscle, though it is curious that no one has succeeded in producing stippling outside the body by mixing any preparation of lead with normal blood or blood containing many polychromasic cells. The association with lead is so intimate that the discovery of punctate basophilia is an important item in the diagnosis of industrial lead poisioning, and its abundance has come to be regarded as the most significant indication of lead intoxication by the Liverpool Medical Research Organisation. But it is, of course, well known that stippling occurs in pernicious anæmia, malaria, leukæmia, and other anæmias, especially those of a toxic origin, and where the products of red cell destruction are retained in the body; NAEGELI found them in his own blood after an orgy of black pudding. But they occur only when regeneration of red cells is going on, and they are not found in aplastic anæmia, or in states of inhibition or depression of the bone-marrow. Immature red cells are therefore a necessity; these may be altered in a variety of conditions in some way which leads to basophilic points being precipitated inside the cells as the blood film is being made; normally the material remains diffuse and gives the appearance of polychromasia.

Annotations.

"Ne quid nimis."

HOUSING CONDITIONS AND INFECTIOUS DISEASE.

IN order to study the relation between bad environment and infectious disease the Medical Research Council recently made an inquiry into measles in the tenements of Glasgow.[1] Dr. J. L. Halliday, who directed the investigation, points out that school is one of the most important factors in disseminating infection, but that school-children are past the dangerous age. The extent to which they will spread the disease among children under two—who are ten to twenty times as liable to die of it—depends very largely upon home conditions. A special study of certain tenements showed that in these buildings children often became infected at the earlier and more fatal ages, whereas a similar study of a housing scheme area, where each house had its own door of entry, showed that measles was far more usually a disease of school age. Figures from other sources agree with this finding. In Birmingham and Renfrewshire, where the people do not live in tenements, only 45 per cent. of all cases of measles occurred under 5 years of age, compared with 58 per cent. in Glasgow and Aberdeen. The Glasgow figures, moreover, are suspected of being too low. The death-rate under 2 is three times as high in Glasgow as in Birmingham, and the death-rate between 2 and 5 is twice as large. Although Dr. Halliday says that age is only one of many factors, and that the difference in the methods of house construction in Glasgow from those in Birmingham may not be even the main determinant of the difference in the respective death-rates, there is sufficient evidence to prove that the tenement system is deplorably wasteful of child life. There is little privacy; families jostle together in the most intimate manner in the common closes and landings, and the common water-closet is an obvious means of contagion. Children under three are generally carried out to sit on the stairhead, at the close mouth, or in the back court; if they get measles the doctor is not sent for, and the attitude of their relatives is completely fatalistic. An interesting by-product of the research was the demonstration of an immunity among presumably susceptible dwellers in a street almost as soon as a highly infective case appeared. This observation is similar to those made by Dr. de Rudder [2] for diphtheria in Germany. The overwhelming majority of persons in a large town, he says, acquire immunity to diphtheria during the first two decades of life, and the denser the population the earlier is this immunity manifested. He also finds that the effect of crowding is to increase the incidence among the youngest children, and hence the total mortality. This is an important, but not the only evil effect of the tenement system, and the facts cannot be too strongly urged on those who have it in their power to ameliorate housing conditions.

[1] Medical Research Council, Special Report Series No. 120, 1928. H.M. Stationery Office. Pp. 34. 1s.

MATERNAL MORTALITY IN CANADA.

A MEDICAL inquiry into maternal mortality was made in Canada during 1925 and 1926, and the results have now been made public in a report [3] published by the Canadian Department of Health. More than 2000 members of the medical profession gave active help in the inquiry, which included records of all deaths of women from 15 to 50 years of age, and the total number of maternal deaths returned was 1532, equivalent to a death-rate of about 6·4 per 1000 living births. It is impossible to assign a specific cause to every death, the contributing conditions mentioned in the returns doubtless overlapping in some cases and being incomplete in others. Puerperal septicæmia was given as causing the death of 418 patients; but since in some provinces the condition is not notifiable, and in others notification is very inadequately carried out, it is probable that this figure should have been higher. Eclampsia and pernicious vomiting were mentioned as causes of death in 242 cases, hæmorrhage in 357, embolus in 87, placenta prævia in 76, nephritis in 80, shock in 63; 136 operations were reported, and 18 letters of advice from physicians expressed the opinion that Cæsarean section was performed too often. Forceps were used in 289 cases. In reply to a question as to the means by which, taking the general circumstances of the patient into account, the physician considered that her life might have been saved, the most frequent answer was "By prenatal care," this occurring 276 times. No prenatal care was given in 1302 cases, and only 12 per cent. of the mothers had anything like effectual supervision before confinement. The term "midwife" in Canada appears to denote an untrained, and usually an incompetent and ignorant woman. The only province in which midwives are licensed by medical authority is Quebec, though Nova Scotia, which permits "any competent female" to practise midwifery elsewhere, makes the curious stipulation that, in order to work in the city of Halifax, she must be trained and certificated. A medical practitioner from Holland reports that the assistance rendered by so-called midwives in Canada, rather than lack of assistance, is often the cause of maternal death, and says that he met with more cases of subacute and chronic puerperal infection in one year in Canada than in 18 years in Holland. Again and again the evidence indicates that lives might have been saved had proper medical care been available; 219 of the women had no medical attendance at birth, and many doctors state that they were not called in until the patient was in labour—sometimes when she was already dying. Generally speaking, maternity has not been treated with the respect it deserves, and letters of advice from the doctors consulted stated that "maternal life has been held in too light esteem."

[2] Deutsche Medizinische Wochenschrift, 1928, i., 385.

[3] Maternal Mortality in Canada. Report of an inquiry made by the Department of Health, Division of Child Welfare. By Helen MacMurchy, M.D. Ottawa. 1928.

and that "doctors do not take these cases seriously enough." Other reasons given for the high mortality are poverty, with lack of any domestic help; overwork and resumption of employment too soon after childbirth; inaccessibility, no doctor or hospital being available within distances up to 60 miles or more; and expense, patients complaining that when a doctor charges 65 dollars to visit a normal maternity case at a distance of seven or eight miles, they prefer to take long chances. There can be no doubt that instruction about the value of prenatal care is badly needed by the medical profession, by fathers, mothers, and the general public. The bringing of skilled medical attendance to every mother during pregnancy and at childbirth is a more complicated problem, and almost seems to imply a subsidised medical service in some form or other. This solution has been adopted in Saskatchewan, where a municipal service has been started, but the system is there regarded not as a cure, but only as the best available remedy for the prevailing distress.

SUBLINGUAL ABSORPTION OF MORPHINE.

IT is often convenient to give morphine by the sublingual rather than the subcutaneous route, and in order to test the efficacy of this common practice Dr. David Davis and Dr. David Ayman[1] have conducted tests of absorption. A known amount of morphine sulphate was placed beneath the tongue in the sublingual space, and after a given length of time the contents were washed out and the exact amount of drug unabsorbed was estimated by Gauss's colorimetric method, one-fifth to one-tenth of the saliva collected during each experiment being used. In each case control tests were made with equivalent amounts of normal saliva. The experiments showed that morphine sulphate in the form usually given is not absorbed to any important extent by the sublingual mucous membrane, and Davis and Ayman therefore suggest that administration of the drug by this route should be discontinued. They admit, however, that morphine sulphate is rapidly taken up by the gastro-intestinal mucous membrane, and provided that a patient is able to swallow his saliva, the practical objection to the sublingual route seems to be very slight.

USE OF ALCOHOL IN FEVERS.

AT the recent discussion at the Royal Society of Medicine on the ætiology of alcoholism reported in our columns[2] Dr. J. D. Rolleston stated that he had for many years been convinced that the unnecessary prescription of alcohol in the treatment of fevers, not only in the acute stage but also in convalescence, was not infrequently the causes of converting abstainers into chronic inebriates. Acting on this conviction, as he shows in the current number of the *British Journal of Inebriety*, during the last two years that he has been in charge of a fever hospital, he has reduced the annual consumption of alcohol from 2589 oz. of brandy to 25½ oz. without any injurious effect upon the patients. The mortality from diphtheria in which most of the brandy had previously been used was lower in 1927 when none had been given than in any previous year, though the type of disease had remained the same. He further maintains that the total consumption of 25½ oz. of brandy, most of which was used in the treatment of pneumonia and enteric fever, is considerably less than that used daily at some fever hospitals, where the delusion still lingers that alcohol is a cardiac stimulant or is otherwise indispensable. Dr. Rolleston suggests that the administration of alcohol in spite of evidence of its inefficacy or harmfulness is due to the pressure exercised upon the doctor by the patients' friends, who are under the mistaken impression that in the absence of such treatment everything is not being done that can be to save life or hasten recovery. Although such influence is much more likely to be brought to bear successfully in private practice than in institutions, it is not without its effect even in hospital, and was undoubtedly responsible in Dr. Rolleston's opinion for the administration of some of the 25½ oz. of brandy used at his hospital last year. In addition to the reduction in the use of alcohol in the wards Dr. Rolleston has exercised a strict control over its administration by the ambulance nurses attached to his hospital, who have been ordered to give a report of every case in which they considered such administration necessary, with the amount given. The result of this measure was that during the whole of 1927 only 1 oz. and 7 drachms of brandy were used by these nurses. This figure applies not only to the 3223 patients admitted to the hospital in the course of the year, but to all the other cases removed by the ambulance nurses, amounting to a total of over 12,000 persons conveyed, and a mileage of over 68,000.

SOME RECENT VIEWS ON ANÆMIA AND RICKETS.

THE current theories on the nature of so-called alimentary anæmias of infancy were reviewed last year in an interesting monograph by Dr. H. Baar, of Vienna.[1] The author, who has done much work on the pathogenesis of these disorders, is unwilling to accept Bunge's iron depôt theory as an explanation of the anæmia of premature infants, or of the great majority of others, though he admits the existence of a rare type, "pseudo-chlorosis infantum," which may be due to a pure iron deficiency. The great majority of infantile anæmias are, in his opinion, influenced by dietetic factors and not by iron, and the greater number of these show some signs of dystrophy. The type of alimentary anæmia selected for special investigation was the so-called goat's milk anæmia, commonly attributed specifically to this mode of feeding. His results appear to disprove the idea that there is any essential difference between this type and cow's milk anæmias; the former were as easily cured by giving *larger* amounts of goat's milk as by a change of diet. Czerny's "fat-injury" hypothesis is held to be refuted by Dr. Baar's investigations, which lead him to the view that the great majority of infantile anæmias are "alimentary-infective." The first stage is a quantitative undernutrition, usually accompanied by signs of dystrophy, but not of anæmia. Consequent to this stage the resistance to common infections (bronchitis, &c.) is reduced, and as a result of this anæmia ensues. The improvement obtained by treatment did not show itself simultaneously in the blood-picture and the nutritive state; that of the former depended on the eradication of the infective condition.

It happens not uncommonly that the exact relation of a symptomatic manifestation to the disease which underlies it is revealed more fully by its response to treatment than by any more direct mode of investigation. A further example of this is provided by the interesting observations which Prof. E. Wieland has published[2] on the anæmia which occurs so commonly in children suffering from florid rickets, and is regarded by some authorities as an essential rachitic symptom. His experience has led him to give the first place in the treatment of florid rickets to "indirect heliotherapy," the use of irradiated ("jecorised") foodstuffs. In this paper a series of cases are described, some of whom were treated with irradiated whole milk and others with dried preparations. Prof. Wieland, unlike Dr. Baar, is strongly impressed with the value of observing Czerny's warning against the use of large quantities of milk, and of keeping the maximum allowance of milk per day below half a litre, or one-tenth of the body-weight. He found that considerably smaller quantities were required in

[1] Arch. Int. Med. 1928, xli., 231.
[2] THE LANCET, April 7th, 1928.

[1] Pathogenese und Therapie alimentärer Kleinkinderanämien. By Dr. H. Baar (Vienna). Berlin: S. Karger. 1927. Pp. 44. M.2.20.
[2] Direkte und indirekte Lichtherapie der Rachitis. Die rachitische Anämie, Schweiz. med. Wochensch., Feb. 18th, 1927.

summer than in winter. In the cases described the rapidity of improvement, as shown by the disappearance of symptoms and by alteration of the radiogram, was extremely striking, and greatly exceeded that obtained by administration of cod-liver oil. But the fact by which the author was especially impressed was that no improvement took place in the blood count, more particularly in the percentage of hæmoglobin. This observation was all the more surprising from the fact that various authors have claimed improvement in non-rachitic anæmias as the result of ultra-violet irradiation; it might well be expected that if any form of anæmia responded to irradiation it would be that associated with rickets. As soon as a more varied form of diet was introduced and iron was administered a return of the hæmoglobin towards the normal occurred. Prof. Wieland concludes that this type of anæmia, though an almost constant concomitant of florid rickets, is not an integral part of the metabolic disturbance inherent in this disease; it is merely a secondary anæmia comparable to those which occur in association with many constitutional disturbances of childhood. In another communication [3] the same author reviews the whole question of the ætiology and treatment of rickets, laying particular stress on certain aspects of the disease. In his opinion rickets is common in early infancy and may be diagnosed in the second month. The divergence of opinion between Prof. Wieland and some other authorities on this point is dependent on the interpretation of the significance of craniotabes. Prof. Wieland draws a distinction between a congenital condition (Weichschädel) resembling craniotabes and any form of craniotabes developing after birth; *all* the latter are, he holds, truly rachitic, and the term 'physiological craniotabes" is not permissible. He found it to be the rule that by administration of antirachitic foods the occurrence of craniotabes could be averted in children born at full term, but that in premature children, at any rate in those whose birthweight was less than 2000 g., he was not able to avert the development of craniotabes by any form of prophylactic treatment. Consequently he holds the opinion that rickets is an inevitable result of prematurity, though its severity may be greatly reduced by early administration of antirachitic remedies.

In reviewing the present state of our knowledge of the ætiology of rickets Prof. Wieland posits the existence of an endogenous factor, a constitutional predisposition. The exogenous factors are all ultimately referable to lack of vitamin D; in these factors the climatic element is of greater importance than the dietetic. The synthesis of vitamin D occurs as the result of the action of ultra-violet rays on cholesterin. Of the various methods of treatment the use of irradiated milk is perhaps the most universally practicable, while irradiated cholesterin (ergosterol) is the most rapid and effective.

VENEREAL DISEASE CONTROL: AN AMERICAN VIEW.

INTERESTING aspects of the problems and methods of venereal disease control in America are discussed by Dr. John H. Stokes in a recent article.[4] He comments on the European origin of so many important syphilologic discoveries and finds the explanation in the costliness of research in the United States. In Europe, he observes, professional overcrowding and a lower living standard make it possible to secure able workers for a mere pittance; in America, the country of high wages and high standards of living, this is impossible. The American clinician seems to have his whole time occupied by his patients; he has hardly a moment for original effort. Thus to organise an institution for pure research means the collection of a large sum of money. Work upon venereal diseases is particularly costly; the maintenance of laboratories and of animal hospitals on a large scale present a grave financial problem everywhere. Dr. Stokes mentions that, six or seven years ago, he estimated the annual cost of a not particularly pretentious laboratory for this purpose as not less than $30,000; this budget he has reason to think was much below the mark. We think of America as a country where rich men readily endow the pursuit of knowledge; but Dr. Stokes remarks that private wealth cannot readily be interested in an enterprise which bears the stigma of venereal disease, a topic which is socially unacceptable. If the existing foundations make no contribution and if public funds cannot be made available, he looks to the undertakings which make money out of the technical perfection and sale of the products of scientific discovery in the treatment of venereal disease. He is not without hope of the development of a profitable alliance between the concerns which exploit such products and the universities and research laboratories. Dr. Stokes is inclined to criticise American clinical research as too short-sighted. Such research in syphilis, as he observes, takes years, not weeks or months, for consummation, yet records have not always been organised over a long period, nor has the research worker always adhered long enough to a single line of investigation to secure a significant result. This criticism, of course, comes home to other countries besides America, and to a great extent the problems he discusses are familiar here. The greatest weakness in the situation everywhere is what he calls the "inadequate follow-up." Results cannot be properly traced because, according to his estimate, no higher proportion of patients can be kept under observation than from 20 to 40 per cent. "The perfection of follow-up becomes, therefore, one of the critical problems of the syphilis clinic; and social service, through whose aid it is usually done, plus the strong arm of the local public health officials, become two of the most important implements in this field of modern medicine." Dr. Stokes expresses the opinion that the movement for the control of venereal disease was indistinct in England during the war but has made marked progress in the after-years. American effort, on the other hand, he regards as having become particularly effective in the war period but as having subsided later in an atmosphere of reaction and retrenchment. If he would develop his experiences of "the strong arm of local public health officials," he might help us to decide the controversies which have arisen out of the proposals of the cities of Edinburgh and Glasgow.

CHOLEDOCHUS CYST.

Dr. E. S. Judd and Dr. E. I. Greene [1] state that only one example of choledochus cyst was found among 17,381 operations performed on the biliary tract at the Mayo Clinic from 1907 to 1926. The condition is generally held to be congenital. Of the 64 cases on record 52 were in females and 10 in males, while in two the sex was not stated. The average age was 15½ years, but most of the patients did not present themselves until after the symptoms had lasted for from two months to 36 years. The youngest case was in a full-term fœtus reported by Heiliger, and the oldest in a woman of 56, recorded by Reel and Burrell. Usually the symptoms appeared before the age of 10 years, and many of the patients were not more than six months old. The oldest patient was 20 when the first symptoms were noted. In some cases pain was the first symptom, varying in degree from simple flatulence to excruciating colic, requiring morphia for relief. Eating often precipitated an attack. Jaundice, however, was the most constant manifestation in all the cases reported, ranging from a slight yellowish tint to severe icterus. Generally, it was intermittent, but sometimes it was continuous. Acholic stools were the rule in most of the cases observed. The diagnostic sign of chief significance, according to Judd and Greene, is a tumour which

[3] Die Rachitis und ihre moderne Behandlung, Fortschritte der Medizin, June, 1927.

[4] Jour. Amer. Med. Assoc., March 10th, 1928.

[1] Surgery, Gynecology, and Obstetrics, March, 1928.

may be barely palpable, or fill the entire abdomen from the costal margin to the crest of the ilium. According to the literature the diagnosis of choledochus cyst has been made only once before operation—namely, by Neugebauer in 1924. The commonest diagnosis has been echinococcus cyst, and the condition has also been mistaken for pancreatic cyst, stones in the common duct, mesenteric cyst, retroperitoneal cyst, cyst of the liver, generalised tuberculosis, chronic peritonitis, ovarian cyst, and cholecystitis. The chief diagnostic features are recurrent attacks of jaundice with pain in the region of the liver, and the presence of a palpable cystic tumour in the right upper quadrant in a young individual, especially of the female sex. As regards treatment any operation should be performed which allows the bile from the cyst to enter the upper gastro-intestinal tract. External drainage has been fatal in all but two cases, the principal cause of death being hæmorrhage. A case seen by Judd and Greene was that of a girl aged 13 years, who from infancy had suffered from attacks of vomiting and abdominal pain which became more severe as she grew older, in spite of removal of the appendix at the age of 8 years. Jaundice had been present five years previously, and again one year before admission. The stools were clay-coloured in the last attack. A tender movable mass was found in the epigastrium, a diagnosis of cholecystitis, probably calculous in nature, was made, and an operation was recommended. A cyst of the common duct, 13 cm. in diameter, being found, an opening was made for the bile to escape, and choledochoduodenostomy was performed. Recovery was uneventful, and a year later the patient reported that she was in perfect health.

POST-GRADUATE TEACHING IN FORENSIC MEDICINE

DISSATISFACTION is often felt because medical students and practitioners have little opportunity of gaining a sound knowledge of forensic medicine. The Council of the Royal Institute of Public Health has therefore arranged a post-graduate course in this subject to be held at the Institute during the summer. It will be divided into five sections devoted to the subjects of evidence; forensic medicine and toxicology; practical toxicology and biological tests; medico-legal pathology; and crime and insanity. The lecturers on these subjects will include Mr. Roland Burrows, Recorder of Cambridge; Dr. Edwin Smith, coroner for the north-eastern district of London; Dr. E. Goodwin Rawlinson and Mr. A. W. Stewart, D.Sc., assistant directors of the State Medicine Laboratories of the Institute; Dr. Robert Donaldson, lecturer on pathology at St. George's Hospital; and Dr. Norwood East, Medical Inspector of H.M. Prisons. Special lectures will also be given by Mr. H. D. Roome and Mr. Gervais Rentoul, M.P. The courses, which will extend from the beginning of May to the middle of July, are described in a syllabus which may be had from the Institute, 37, Russell-square, London, W.C. 1, and a fee will be charged to cover expenses. General approval will be forthcoming for the enterprise, which will undoubtedly be of great assistance both to lawyers and to medical men who are concerned with medico-legal problems.

A SIMPLE HOOKWORM LARVICIDE.

A SIMPLE and effective method of killing hookworm larvæ is announced from the Research Laboratory of the Department of Sanitation of the Rand Mines, Ltd., Johannesburg.[1] Investigating the spread of hookworm infection among white and coloured miners, Mr. W. O. Fischer, Superintendent of the Laboratory, found so many larvæ in the floors of all the pits that he felt some speedy and effective action was urgently needed. As he was at the time examining fæces by the salt-flotation method, it occurred to him to investigate the effect of strong brine on the larvæ. He found that a 10 per cent. brine shrivelled them within their sheaths and killed them in half an hour, a 20 per cent. brine in ten minutes. Dry salt, 1 lb. to a square yard, with half a gallon of water poured on later, was also found to be effective but slower in its action than brine. Apart from its cheapness, salt has the great advantage of not harming men or equipment. In the mine galleries Mr. Fischer found infection concentrated about the latrines (groups of latrine buckets, standing on a cemented or hard earth base), around which he found larvæ in the floors and walls. Dry kitchen salt was spread on two successive days where the buckets stood and on the floor around; seats and floor were sprayed and washed with 20 per cent. brine, the whole proceeding costing no more than 2*s*. for salt. Tested again after four days the floor and walls were found free of larvæ. To make doubly sure Mr. Fischer now puts an inch of salt at the bottom and another inch at the top of each newly provided bucket before it is taken to the destructor; in these he has never been able to find living larvæ after eight hours. The method is so promising that he is now encouraged to hope he may soon see the mines free from infection. Full details of the experiments are given in the paper, and all who have to deal with hookworm in the tropics would be well advised to give a trial to this simple method of protection.

[1] Archiv für Schiffs- u. Tropen-Hygiene, April, 1928.

AURAL DISEASE AND MILITARY SERVICE.

THAT there is a large amount of aural disease among the general population is a fact once more brought into prominence by the discussion at a combined meeting of the Sections of War and Otology of the Royal Society of Medicine last week (see p. 812). It is to be hoped, and it may be expected with some confidence, that the prophecy of Wing-Commander David Ranken may prove a true one, that the work now being done in school clinics, and the increase in the number of aural specialists in our hospitals, will lessen the sum total of these cases. At the present time, however, aural disease is a serious cause of economic loss to the community; this becomes especially apparent in any large organisation such as the Army, and it is therefore natural that the discussion should have been almost entirely limited to the problem as it affects the Services. Two difficulties in particular arise in connexion with disorders of the ear in military life; the first, alluded to by Mr. T. B. Layton, is that of malingering, for if a soldier with chronic aural suppuration complains of pain around the ear, or of giddiness, it is extremely hard to be sure that he is not suffering from some serious complication, and impossible to insist on his return to duty. The second difficulty, which was touched on by Mr. Sydney Scott, is that of distinguishing those cases which have sustained actual damage to the ears during their term of service from those in which aural disease was already present at enlistment. After the late war there were a great many ex-soldiers in this latter class, and many of them had suffered for years from suppurating ears; but where there was no record of the condition on enlistment, it was often impossible to separate the two classes, with the result that many men received compensation for war injury to which they were not properly entitled. Though there is some difference of opinion about what diseases of the ear should exclude candidates for enlistment, it is indisputable that the ears of every applicant should be examined, and that any defect discovered should be carefully recorded. This would eventually prove, especially in war, to be an economy rather than an expense, but it implies that all medical officers employed on recruiting should have had training in the examination of the nose, throat, and ear, and that there should be enough specialists to whom doubtful and difficult cases can be referred. The regulations for exclusion may well be more stringent in peace-time than in war, and naturally

more so for flying men than for others, on account of the danger of vertigo, and the liability to trouble from sudden changes of atmospheric pressure. On the other hand, Mr. Scott pointed out that men with bilateral perforation of the drum-membranes did successful flying in the war, and were in the fortunate position of not suffering from giddiness when diving rapidly, and Mr. A. R. Tweedie stated that 15 per cent. of the successful force at Gaza had chronic suppurative otitis media. The truth is that there are many different types of suppurative otitis, and that some are more dangerous than others. All medical officers examining recruits should be able to recognise a perforated drum, and should be in a position to refer the applicants to a specialist for final decision.

THE King has appointed Dr. John James Rickard Macleod to be Regius Professor of Physiology in the University of Aberdeen in succession to Prof. J. A. MacWilliam. Prof. Macleod, who is a graduate of Aberdeen, has since 1918 been professor of physiology in the University of Toronto. The part which he played in discovering insulin was recognised in 1923 by the conferment of the Nobel Prize for Medicine upon him in conjunction with Dr. F. G. Banting.

THE Founder's Medal of the Asiatic Society of Bengal has been awarded to Sir Malcolm Watson, in recognition of his anti-malarial work in Malaya.

THE next social evening of the Royal Society of Medicine will be held at 1, Wimpole-street, W., on Monday, May 7th. Sir James Berry (the President) and Lady Berry will receive the guests at 8.30 P.M., and at 9.15 Mr. P. B. Tustin will give an illustrated address entitled Milk—from Cow to Consumer.

Summer Time will commence in Great Britain, Ireland, the Channel Isles, and the Isle of Man, next Sunday morning, April 22nd, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 7th.

WE greatly regret that a note appeared in THE LANCET of last week announcing, on erroneous information, the death of Dr. I. A. Davidson of Belfast. Dr. T. A. Davidson, of the same city, who died on March 28th, was his cousin.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. E. O'Reilly to *Victory*, for R.M. Infirmary, Portsmouth, and E. S. Bolton to *Constance*.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. A. E. B. Wood, Reg. Army Res. of Off., to be Maj. whilst re-employed, and relinquishes the rank of Lt.-Col.

Maj. E. C. Stoney is re-employed.

ROYAL AIR FORCE.

Flying Officer P. H. Perkins is granted a permanent commission in this rank.

INDIAN MEDICAL SERVICE.

Capt. Abani Mohan Ghosh to be Maj.

Lt.-Col. J. A. Shorten retires.

Lt. Shanker Parashram Joshi to be Capt.

Temp. Capt. Samuel Mufty and Temp. Lt. Satya Raju Chittoory resign their temp. commissions.

ARMY DENTAL CORPS.

Seven commissions in the Army Dental Corps will be offered next month. Candidates must be unmarried, under 28 years of age, and must hold the degree or licence in dental surgery of a British University or recognised licensing body, and be registered under the Dentists Acts. Intending candidates should make application, not later than May 7th, to the Under-Secretary of State (A.M.D. 1), the War Office, Whitehall, London, S.W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXII.—THE TREATMENT OF CANCERS OF THE SKIN.

IT is essential before considering the treatment of cancers of the skin to have a clear conception of the varieties of skin carcinomata, and to be able to recognise them at an early stage. On neither of these important points is much assistance to be had from text-books.

In this country cancers of the skin are usually divided into two main groups: (1) squamous carcinoma; (2) basal carcinoma. The former arising from the prickle cells of the epidermis is spoken of as an epithelioma. When well established it grows rapidly, involves the neighbouring lymphatic glands, and produces metastases in the internal organs. It is rightly considered as being "generally malignant." Whilst the latter, arising from the basal cells of the epidermis, is termed a rodent ulcer because sooner or later it usually undergoes ulceration and if untreated may involve the deeper structures without however invading the lymphatic glands or producing metastases. Hence this, the commoner form, is regarded as being "locally malignant."

Squamous Carcinoma.

The first evidence of an epithelioma is a local infiltration of the skin with central thickening or keratosis. This can be observed when the tumour is no larger than a pin's head, and at first glance suggests nothing more than a plugged follicle. If, however, we excise it and examine it at this stage, we find that the apparent plugging is due to an increase of the keratin layer. A slightly older growth, of two to three weeks' duration, gives a tumour of the size of a small pea, raised above the surface of the skin, of the colour of the skin, with a rose-tinted base due to dilated venules and presenting in its centre hyperkeratosis. If the skin is put on the stretch the periphery of the tumour may appear translucent. The growth is firm, though not necessarily indurated, can be felt to be invading the true skin, and is freely movable in the skin; the tumour has not been invaded by pus cocci; there are no signs of inflammation around it and its contents cannot be extruded by ordinary pressure. The neighbouring lymphatic glands are not involved, and at this stage the epithelioma is quite benign.

Differential Diagnosis.

From what have we to differentiate it in arriving at our diagnosis? Photographically it may simulate: (1) an early basal carcinoma; (2) a small boil; (3) a molluscum contagiosum; (4) a small sebaceous cyst; (5) a mole or (6) a simple wart.

An early non-ulcerated basal carcinoma has a more translucent appearance than a squamous carcinoma. Its centre shows no keratosis, but gives the appearance of a slight depression. The tumour is softer and does not infiltrate the true skin to the same extent. It usually takes two *years* to attain the size of a two *weeks*' epithelioma.

A small boil invariably gives us evidence of inflammation, its necrotic centre exudes pus, and on trying to raise it from the skin it is found that there is infiltration of the dermis for some considerable area around the protuberance. A difficulty arises, however, when the epithelioma has become infected. Such a case was sent to me a short time ago as a rodent ulcer. The lesion was so masked by the super-added infection that though it was easy to exclude rodent ulcer with the history of but three weeks' duration it was not evident that we were not dealing with an infected granuloma. A week's

treatment cleared away the infection and revealed a typical squamous carcinoma.

The tumour of molluscum contagiosum is usually multiple, but even when solitary it can readily be excluded. It is translucent, umbilicated, and soft. Its caseous contents of molluscum "bodies" can easily be expressed. It is more frequently situated *upon* the skin rather than *in* the skin.

A small sebaceous cyst is yellowish-white, translucent, and soft. It does not infiltrate the skin, and, on puncturing, its sebaceous contents can be expressed.

The history, colour, presence of downy hair and softness of the mole should be sufficient to exclude it, whilst the wartiness of its whole surface and the absence of infiltration should rule out the common wart.

Consideration of the above points explains why epitheliomas have, not infrequently, been described as originating in moles, warts, wens, "powkes," cysts, and boils. I have frequently seen cases in which the diagnosis has been missed because due consideration has not been given to their differentiation, and even at times when I have demonstrated what appeared to me to be a typical early epithelioma I have only convinced my audience by subsequently exhibiting a section of the growth. It seems as if it were difficult to realise that such a small innocent-looking tumour is in reality a carcinoma which, if maltreated or untreated, may become highly malignant.

It is not easy to foretell how rapidly the early lesion may progress, nor how soon the lymphatic channels may become invaded, nor yet what character it may assume later, whether superficial or deep, discoid, cauliflower, crateriform, or fungating. It is certain, however, that the less invasion there is of the true skin, the less malignant will the growth be.

Basal Carcinoma.

I have described above the general picture of an early basal carcinoma. The term rodent ulcer is misleading, for a large proportion of these growths are not ulcerated, though they may have been growing for many years. I wish therefore to emphasise the multiformity of basal carcinomas. Clinically, we recognise the following types: (1) superficial-cicatricial; (2) hypertrophic; (3) cystic; (4) morphœiform; (5) pedunculated; (6) nodular and indurated; (7) scirrhous.

When, however, ulceration supervenes and becomes well established, the multiformity is lost in the more uniform picture of the rodent ulcer with its uneven surface, covered by a glairy or hæmorrhagic discharge and its irregular rolled edge, which by gradual erosion may destroy muscle, cartilage, periosteum, and even bone. Fortunately this advanced picture, too often seen 20 years ago, is rarely met with to-day; due no doubt to its earlier recognition and to the more modern methods of treatment.

The *superficial-cicatricial* type is easily the commonest variety; it spreads eccentrically, cicatrizing in parts, leaving scattered nodules within an area (the surface of which often presents a rosaceous tint due to dilated venules) bounded by a well-marked raised gelatinous-looking ridge. The multiple basal carcinomas of the trunk, which are often mistaken for lesions of seborrhœa, psoriasis, lichen planus annularis, or Bowen's precancerous dermatosis, are usually of this variety.

The *cystic* type must be differentiated from sebaceous cysts and lupus vulgaris. The *nodular*—arising from the basal cells of the hair follicles—and the *schirrous*—arising from the basal cells of the sebaceous glands—are not infrequently diagnosed as epitheliomas on account of their induration, but the history of many years' duration should negative this.

Age Incidence.—Multiple Growths.

Though the incidence of cancer is much greater after middle age, one should not let the youth of the patient deter one from making a positive diagnosis. I have frequently seen epitheliomas and rodent ulcers in patients under thirty years of age. Two further points call for mention. If a patient presents a carcinoma on the face, the whole surface of the body should be examined for further growths and the patient kept under observation for years afterwards to note the possible development of further lesions. Multiple growths are far commoner than is usually supposed.

Methods of Attacking the Growth.

Excision.—The treatment of early carcinomas, whether squamous or basal, which I invariably adopt and advise is excision. It can easily be done under a local anæsthetic by the practitioner. It is not necessary to sacrifice more than one-sixth of an inch of the surrounding tissue, nor to dissect out the neighbouring lymph glands, but it is essential to remove the whole thickness of the skin and thus to get *beneath* the growth.

Diathermy.—Epitheliomas of more than six weeks' duration, in the absence of lymphatic invasion, I prefer to remove by means of the diathermy knife. By this method the neighbouring lymphatics and blood-vessels are sealed and the chance of recurrence or of dissemination of the cancer cells is very greatly diminished. If, however, the glands are suspected of being involved block dissection by a surgeon is indicated.

Curetting followed by X Rays.—For basal carcinomas other than the smallest, my method of treatment for the last 25 years has been curetting followed by X rays. The cosmetic result is excellent and "recurrences" very rare. Under a local or general anæsthetic (if necessary) I thoroughly curette the new growth, using adrenalin to stop the oozing, and then apply pure resorcin to the blanched surface, since resorcin has a selective action on epithelial cells. The ulcer is then exposed to a pastille dose of X rays, which is repeated on the two following days. Boric ointment dressing should be applied to the lesion till the ulcer has completely healed, and the patient should be kept under observation for a period of at least two years. So satisfactory has this method proved that I have seldom resorted to other means. Where there is any doubt as to the diagnosis or where it is suspected that the tumour may be a mixed squamo-basal growth, then I would most certainly deprecate curetting and advise excision.

Solid Carbon Dioxide.—The more superficial the basal carcinoma—e.g., those on the trunk—the less readily do they respond to the X rays alone. Hence many workers prefer to use solid carbon dioxide for this type of growth. In the hands of the expert it answers well, but I have had so many rodent ulcers referred to me which have been unsuccessfully treated by solid carbon dioxide that I hesitate to advocate its use. The apparent reason for failure is that it has not been applied long enough nor with sufficient pressure to produce total destruction of the diseased tissue. The cosmetic result is not always satisfactory.

Radium, in the hands of the radium expert, is the most useful method of treatment at any stage of the carcinoma. The resulting scar is supple and usually devoid of telangiectases. Recurrences are few. I have used it for small growths and for recurrent nodules with satisfactory results.

LOUIS SAVATARD, L.S.A.,
Hon. Physician, Manchester and Salford Skin Hospital; Hon. Lecturer, Manchester University.

THE NURSES' CO-OPERATION.—The annual report of this co-operation for the year 1927 shows continued prosperity. The gross receipts from patients amounted to nearly £54,000, of which sum over £50,000 was paid to nurses, while the income of the society derived from commission on fees earned by nurses, together with interest was £3370. The number of nurses on the staff was 38 and 2637 cases were nursed during the year.

Special Articles.

FRACTIONAL TEST-MEALS.

ANALYSIS OF RESULTS OBTAINED IN ONE HUNDRED AND SIXTY CONSECUTIVE TESTS.

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THE work of T. I. Bennett, and J. A. Ryle and others of the Guy's School, has brought Rehfuss's fractional test-meal method into evidence in England, and it is now used in many hospitals as a routine method of examining suspected gastric and duodenal cases. The following paper is a brief report on 160 test-meals and an attempt to evaluate the method as a routine test. I wish to acknowledge my indebtedness to the above authors, whose conclusions largely guided me in reporting on the findings. No attempt has been made to review the literature or describe the methods used.

The cases examined were selected by the clinical staff, and none was omitted from the series save those who vomited during the meal, those (a few only) with very excessive salivation, and those spoilt through some accident (e.g., a case of suspected duodenal ulcer with apparently complete achylia and failure of motility—subsequently found to be taking large doses of belladonna). In all 20 cases were excluded. Acidity is expressed as a percentage of decinormal solution and refers to free acidity (Töpfer's) unless otherwise stated. The following limits have been used to define normality, hyper- and hypochlorhydria, &c.:—

		Per cent.	
Low normal ..	Free acid	10 to 20	0·1 normal NaOH.
Average normal ..	,, ,,	20 to 40	
High normal ..	,, ,,	40 to 50	
Range of normal ..	.. ..	10 to 50	
Achlorhydria ..	No free acid	..	.. Normal chlorides.
Hypochlorhydria	Free acid less than 10		0·1 normal NaOH.
Hyperchlorhydria	,, ,, more than 50		
Achylia	No free acid and very low chlorides.		

Total and mineral chlorides were estimated in a large proportion of the meals, but are not considered in the present discussion except to diagnose achylia from achlorhydria due to excessive neutralisation.

It was assumed for purposes of reporting that the cases examined were suffering from some gastric or duodenal lesion, either organic or functional. Certain findings (some compatible with normality) therefore suggested certain lesions, though the absence of such findings was never held to indicate the absence of a lesion, with the exception of those typical of new growth and pernicious anæmia. These findings can be grouped under three headings: (1) findings suggestive of juxta-pyloric ulceration, (2) findings suggestive of new growth, and (3) findings suggestive of pernicious anæmia.

Findings Suggestive of Juxta-pyloric Ulceration.

A curve of free acidity above 50 per cent. (cases giving single values just above 50 per cent. being excluded) was considered suggestive of juxta-pyloric ulceration, particularly of duodenal ulcer when the rise was rapid, with rapid emptying and continued secretion. No real attempt, however, was made to diagnose ulcers of the duodenum from ulcers occurring at or just on the gastric side of the pylorus. It must be remembered, however, that, without symptoms, such a curve of hyperacidity in no way suggests a lesion, as it is found in 8 per cent. of healthy men and in functional conditions. No attempt was made to diagnose gastric ulcer other than juxta-pyloric by the test-meal findings.

Findings Suggestive of New Growth.

The diagnosis of new growth was made almost entirely on the resting-juice. A foul-smelling, thick resting-juice containing charcoal from overnight, food debris, altered blood, pus, and organic acids was considered absolutely diagnostic. In less marked cases the presence of altered blood in appreciable quantities was considered good grounds for the diagnosis. Some charcoal was nearly always found, however little resting-juice might be obtained. Fresh streaks of blood and swallowed blood (bad teeth and gums) were ignored. The presence of a low or achlorhydric curve was regarded as confirmatory of the diagnosis, but the occurrence of a completely normal curve did not exclude the diagnosis of new growth. The presence of lactic acid (McLean's test) has not been found of diagnostic significance in this test-meal and was not relied upon.

In any case of obstruction food debris, charcoal, and organisms will be found in the resting-juice, but in simple obstruction I rarely found altered blood, except after a recent hæmorrhage. Also in simple obstruction the volume of resting-juice was generally larger and the charcoal not so intimately mixed.

Findings Suggestive of Pernicious Anæmia.

The curve considered typical of pernicious anæmia is one showing complete achlorhydria (low chlorides and rapid emptying). It is said to occur in 4 per cent. of normal people and is frequent in various pathological conditions besides pernicious anæmia. No attempt was made to diagnose other clinical entities, but an indication of the state of the secretory and motor functions was given by a detailed report on the findings.

Test-meal Findings.

In the following review of cases examined the test-meal results are correlated with the operative and the X ray findings, with a view to determining the value of this examination as an aid to diagnosis and treatment, and as an indication for or against certain operative procedures. The actual findings are given here, but the discussion of their value is reserved till later in the paper. The cases are divided for convenience into medical and surgical groups, which are again subdivided according to the operative or clinical findings.

Surgical cases, subdivided according to the lesion found at operation.

1. *Duodenal ulcers.*—Thirty cases occurred in this series, 26 males and 4 females. In 17 of the cases, 16 men and 1 woman, the test-meal findings were such as to have been described above as typical of juxta-pyloric ulceration. In some of these the stomach emptied rapidly ($\frac{3}{4}$ hour) and there was a continuous secretion. In the remaining 13 cases the findings were atypical. The average emptying-time of the whole series was 1·9 hours, the range $\frac{3}{4}$–$2\frac{1}{2}$ hours.

Unfortunately these cases were not all examined radiographically by the same observer. In all 25 cases were examined, and of these 17 were correctly diagnosed and 8 incorrectly. One observer made 10 correct and 1 incorrect diagnoses, but these were selected cases sent from another hospital and so do not represent his real error. There was no relation either in this or any of the other series between correct or incorrect X ray diagnosis and typical or atypical test-meal findings.

2. *Gastric ulcers.*—Twenty-three cases: 17 males, 6 females. These must be divided into those with pyloric or juxta-pyloric ulceration, which should typically show a curve of hyperacidity, and those with ulceration of the body remote from the pylorus, which are not characterised by any definite curve of gastric acidity.

There were 14 cases of juxta-pyloric ulceration; of these 8 had typical findings, 5 had marked obstruction, and 1 gave atypical findings—i.e., the true surgical conditions could be inferred in 13 out of 14 cases. Nine cases had ulceration of the body away from the pylorus; of these 2 gave hyperchlorhydric curves and the remaining 7 normal or low curves. The average emptying-time for cases without marked obstruction was 2 hours, and the range $1\frac{1}{2}$–$2\frac{3}{4}$ hours.

3. *No gastric or duodenal lesion.*—Twenty-eight cases: 14 males, 14 females. The cases in this group, with a single exception which was diagnosed as a case of gall-stones, were clinically considered to have symptoms sufficiently suggestive of a gastric or duodenal lesion to warrant a test-meal examination, but no gastric or duodenal lesion was found at operation. The actual findings were: 7 cholecystitis or cholelithiasis, 7 cases nil found in abdomen, and 1 case ovarian tumour (!). Thirteen cases had their appendices removed, but frequently this organ appeared in no way abnormal!

The test-meal findings in this series were 23 normal or subnormal curves, which, though in no way excluding either gastric or duodenal ulceration, did not suggest juxta-pyloric

ulceration, and 4 hyperchlorhydric curves suggestive of juxta-pyloric ulceration (one of these curves was from a gall-bladder case). One case of gall-stones had a resting-juice typical of a new growth; at operation nothing was found to account for the obstruction, which was apparently reflex in origin; the altered blood in the specimen was not accounted for. The patient has been seen again 18 months later; she is still vomiting and complains of gastric pain; there is a large mass in the pelvis. The average emptying-time for this series was 2 hours, range 1¼–2½.

Twenty-two of the cases had an X ray examination. Twelve showed no gastric or duodenal abnormality, 7 were thought to have pyloric or gastric ulcer, 2 new growth, and 1 a duodenal ulcer.

4. *A single case* will be discussed here, as it is difficult to place it in any class, though it resembles the one reported in some detail in the previous group. The patient, a female, had previously had an operation for apparent pyloric obstruction (symptoms vomiting and pain, X ray delay up to 48 hours). At operation the gall-bladder was removed for stone and a thickened but not obstructed pylorus was noted. X ray a year later showed no delay. Two years later the patient returned with symptoms of obstruction (vomiting, marked loss of weight). On examining the resting-juice, findings typical of obstruction were noted, the presence of altered blood suggesting malignant disease. At operation nothing was found in the stomach and a normal appendix was removed. Eight months later this patient again returned complaining of persistent vomiting. An X ray examination and clinical observation in the ward demonstrated a delay of over 24 hours. At operation adhesions, but a perfectly patent pylorus were found. Finney's operation of gastro-duodenostomy was performed. A post-operative test-meal done 10 days later showed food retention from the day before. This and the previous case are of interest as examples of reflex obstruction, both in cases of gall-stones and both persisting after the removal of the gall-bladder

5. *Malignant disease.*—Fourteen cases: 5 male, 9 female. This small series is of interest as, in my opinion, it constitutes the justification for a test-meal examination in cases with vague gastric symptoms. Two cases in this series had test-meals because the resident medical officer could not think of anything else to do; the diagnosis resulted from this chance, and these two cases were among the four that were operable in the series. The test-meal findings were typical in all cases but one. This case, a man, aged 64, had marked obstruction, but there was a very large volume of highly acid (90 per cent.) resting-juice and no altered blood. The pathologist's report on this case was: "Malignant ulcer of the pylorus of curious type, very localised, and other parts of the stomach very little affected."

The positive diagnosis was correct, therefore, in 13 out of 14 cases. Three cases were wrongly diagnosed as malignant: 2 have been reported in detail; the third case, which had a typical resting-juice and occult blood in the stools though there had been no recent hæmorrhage, was found at operation to have an hour-glass stomach with a large ulcer on the posterior surface, which was adherent to the pancreas. The radiologist had correctly diagnosed the condition, but the surgeon thought, on the history, that the case was probably malignant.

The emptying-time was not determined in many cases, as only the resting-juice was examined, but the average time was 1·84 and the range ¼–2¾. The average in a larger series would probably be higher, as this series included two cases of leather-bottle stomach that emptied very rapidly.

X ray examination was made in 11 cases; in 8 the correct diagnosis was made, in 2 simple obstruction was reported, and in 1 nothing abnormal was discovered; the three latter all had new growth at the pylorus.*

The diagnosis was clear clinically in nearly all the cases, but in 2 cases it rested on the test-meal findings alone.

Post-operative Test-meals.

Sixteen of the gastric and duodenal cases reported above had post-operative test-meals done within a fortnight of their operation.

Six gastric cases.—After partial gastrectomy and gastro-jejunostomy five of these cases had no free acidity and one a free acidity of 18 per cent. (pre-operative value 44 per cent.). Bile regurgitated freely in all and the emptying time was decreased, with the exception of the case mentioned above in which the stomach was not empty at two and a half hours either before or after operation. Only one of these cases had a high acidity before operation, and none emptied rapidly.

Nine duodenal cases had post-operative test-meals. Three had gastro-jejunostomy performed; the result was free regurgitation of bile and reduction of emptying time, but there was free acidity in all three cases, the maximum acidities before and after operation in the three cases being respectively 48 and 20 per cent., 112 and 28 per cent., and 40 and 40 per cent. The case with high acidity before operation emptied rapidly both before and after operation.

Six cases had a Finney's gastro-duodenostomy, and their after-results are of some interest. The change of maximum acidity was respectively 50 to 26 per cent., 90 to 62 per cent., 48 to 54 per cent., 28 to 32 per cent., 62 to 58 per cent., and 70 to 60 per cent.—in no case a marked reduction and in two cases an actual increase of acidity. The emptying time was increased after operation in all cases but one, and in some the delay was very marked. Two patients had appreciable quantities of food debris in their resting-juices after the operation though not before; in neither was the stomach empty when the post-operative meal was ended. Another case, mentioned above, had a large volume of resting-juice containing much food debris, indicating a marked degree of obstruction. Regurgitation of bile occurred in all but two cases. The failure to obtain a marked reduction in acidity and the increase in emptying time noted in all but one case are in marked contrast to the results obtained in gastro-jejunostomies. The fact that there is improvement in symptoms would suggest that acidity is not the major factor in preventing healing.

Non-surgical Cases.

The cases reported below had a test-meal given either because of gastric symptoms or, in the case of anæmias and in certain cases of rheumatoid arthritis, to investigate their gastric functions for therapeutic reasons.

The cases may be divided into two groups—viz., (1) those with either gastric or duodenal symptoms, and (2) those with some general condition.

1. Eighteen cases (4 male and 14 female) had symptoms suggestive either of a duodenal ulcer (2 cases) or of some simple gastric lesion. The test-meal findings can be divided into—normal, 10 cases; achlorhydria, 4 cases; and hyperchlorhydria, 4 cases. The large proportion of achlorhydrias is of interest, especially as all 4 cases were of the achylic type; their symptoms improved on treatment with hydrochloric acid. The average emptying time was 1·7 hours, range ¾ to 2¾ hours.

Thirteen of the cases were X rayed: 8 were reported normal and 5 had either gastric or duodenal ulcer.

The clinical diagnosis was: duodenal ulcer, 2 cases; gastric ulcer, 10 cases; alcoholic cirrhosis, 1 case; gastritis (influenzal, &c.), 2 cases; dyspepsia due to dental caries, 1 case; and gastric neurosis, 2 cases.

Both the duodenal cases had normal test-meal findings, but the case that was X rayed showed a duodenal ulcer. The 4 cases of hyperchlorhydria were all diagnosed gastric ulcer, and the 3 that were X rayed showed a pyloric ulcer. The other 6 cases diagnosed gastric ulcer included the 4 cases of achlorhydria and 2 normal curves. The case of alcoholic cirrhosis gave a low normal curve with excess of mucus, and the X ray was negative.

All improved under treatment and were discharged. Two cases, both women, were examined for the possibility of a new growth of the stomach; both gave normal test-meal and X ray findings. One was probably a new growth of the bile passages; the other was never definitely diagnosed.

2. The non-gastric series consisted of 14 cases of anæmia and allied conditions, 6 cases of rheumatoid arthritis, and 7 cases of general debility.

* Since writing the above I have examined two more cases of new growth, one male and one female. The former had typical findings and at operation an inoperable growth causing marked obstruction was found. The latter case had normal test-meal findings with the exception of pus in the resting-juice; at operation most of the stomach and the first part of the duodenum was removed. The growth was small and localised at the pylorus (no obstruction), and the mucous membrane of the stomach was unaffected, except at one point on the pylorus where the growth was just ulcerating through.

The cases of anæmia can be subdivided into: (*a*) 3 cases, males, of pernicious anæmia; (*b*) 2 girls, children of one of the men in (*a*); (*c*) 2 cases of anæmia of pregnancy of the pernicious type; (*d*) 1 case, female, achylia 20 years ago (Pavlov); and (*e*) 6 cases, 3 males and 3 females, of severe secondary anæmia.

The gastric curves of the individuals in groups (*a*), (*c*), and (*d*) were all similar and of the achylia gastrica type—i.e., no free acid, low chlorides, and rapid emptying (average time 1 hour, range ¾–1¼ hours). The 2 cases in group (*b*) gave curves with no free acid, but the total acidity had maximum values of 15 and 20 per cent. respectively, and both emptied more slowly than the cases in the above groups. The 6 cases of secondary anæmia showed nothing of interest in their test-meals, the range of acidity and emptying time (average 2·1 hours) falling within normal limits. The cases of rheumatoid arthritis, 2 males and 4 females, gave 2 curves of the achylic type, 2 low, and 2 average normal curves. The average emptying time was 1·83 and the range 1–2½ hours. The 7 cases of general debility, 3 male and 4 female, all gave normal curves, with the exception of one, who gave an achlorhydric curve with rapid emptying and a large excess of mucus.

Table I. is drawn up from the cases reported in this paper that had a complete examination, and

TABLE I.—*Percentages.*

Figures in italic (on top or alone), Ryle's.
Figures immediately below, own series.

Condition.	Number of cases.	Achlorhydria.	Hypochlorhydria.	Low normal.	Average normal.	High normal.	Hyperchlorhydria.
Normal (Bennett and Ryle).	*100*	*4·0*	*1·0*	*10·0*	*59·0*	*18·0*	*8·0*
Duodenal ulcer.	*34* 30	*0·0* —	*0·0* 3·0	*11·7* —	*8·8* 30·0	*26·4* 13·3	*53·0* 53·3
Gastric ulcer. Confirmed cases.	*24* 21	*4·1* 0·0	*12·5* 4·0	*16·6* 4·0	*20·8* 30·4	*25·0* 4·0	*20·8* 48·0
New growth.	*10* 12	*30·0* 50·0	*30·0* 25·0	*20·0* —	*10·0* 17·6	*10·7* —	*0·0* 8·0
"Appendicitis."	*13* 13	*23·0* 16·6	*0·0* —	*7·6* 16·6	*38·4* 38·8	*7·6* 16·6	*23·1* 11·1
Gall-stones.	*7* 5	*14·2* —	*0·0* —	*0·0* 20·0	*57·1* 60·0	*14·2* —	*14·2* 20·0
Pernicious anæmia.	*6* 3	*100·0* 100·0	— —	— —	— —	— —	— —
Rheumatoid arthritis.	*8* 6	*37·5* 33·3	*12·5* —	*12·5* 33·3	*0·0* 33·3	*0·0* —	*37·5* —
Secondary anæmias.	— 6	— 33·3	— —	— 16·6	— 33·3	— 16·6	— —

rom figures taken from Table V. in Ryle's [1] book. ts moral is the folly of giving percentage values rom such limited series, in which one case will alter he values to such a marked degree.

Summary.

To sum up, the reported findings will be considered from the following points of view: (1) their diagnostic and therapeutic significance; (2) their significance from the point of view of (*a*) the secretory, and (*b*) the motor function of the stomach; (3) sex incidence.

It cannot be too emphatically stated that, with the exception of new growth of the stomach, the test-meal examination gives very little help in diagnosis. In medical conditions such as pernicious anæmia the diagnosis rests upon other examinations. In the surgical conditions other than new growth, a good X ray plate gives far more valuable information. In confirmed cases of gastric and duodenal ulcer the chances are practically equal that the test-meal findings will be the so-called typical ones or normal (or abnormal), so that the fact that the gastric curve is normal will not rule out these conditions. Further, a hyperchlorhydric curve without symptoms in no way suggests a lesion. However, given that the patient under examination has gastric or duodenal symptoms, a curve of the hyperchlorhydric type, if it occurs, is strongly in favour (a 5 to 1 chance) of some juxta-pyloric lesion, though this type of curve may be found (albeit far less frequently) in cases of gall-bladder disease or appendicitis. This is clearly seen in the series of patients in whom no lesion was found surgically, although one was diagnosed clinically. Of these, only 5 out of 28 gave a hyperchlorhydric curve.

It is difficult to sum up the X ray findings, as the examinations were made by different observers. It would appear that a radiologist who specialises in abdominal work can make a positive diagnosis in a large number of cases of duodenal ulcer, though the diagnosis is not so easily made in gastric cases. It would appear therefore that the tendency of certain surgeons to depend more and more on radiographic and test-meal examinations for making their diagnosis is not justified. Undoubtedly a good X ray examination can in many cases decide the diagnosis, but a test-meal examination is only rarely of diagnostic significance. Positive test-meal findings may be helpful, but there are so many gastric and duodenal cases with proved lesions in which the test-meal findings are completely negative that they seem of small value as a routine examination. Further radiographical and chemical work will advance the diagnosis of gastric, duodenal, and other abdominal lesions, but there still appears to be a large field for clinical study.

As a guide to treatment the claims of the test-meal are stronger, as it gives definite information as to the secretory and motor functions of the stomach, which may be disordered apart from any organic lesion. It is argued that a single test-meal can give little information of value as regards the secretory function, as nervous and other influences will render the findings variable; the curve of acidity, however, is not greatly altered in repeated test-meals, but remains of the same type. The findings are of use, therefore, therapeutically, as the beneficial effect of hydrochloric acid medication in achlorhydric cases clearly demonstrates.

The motor function, as judged by the emptying time, is probably more accurately gauged by the fractional test-meal method than is the secretory function. Table II. shows that, except in pernicious anæmia, the variation in emptying time is not related

TABLE II.—*Rate of Emptying of Gruel Meal Relative to (1) Clinical Condition and (2) Type of Curve.*

Clinical condition.	Average emptying-time in hours.	Type of curve.	Average emptying time in hours.
Duodenal ulcer ..	1·9	Achylic.	0·86 } 1·39
Gastric ulcer ..	2·0	Achlorhydric.	1·77 }
New growth ..	1·84	Hypochlorhydric.	1·50
Abdominal symptoms, no gastric lesion	2·0	Low } Normal.	1·80
		Average } Normal.	2·01
Non-surgical gastric or duodenal cases	1·7	High } Normal.	2·06
Pernicious anæmia and allied conditions	0·96	Hyperchlorhydric.	2·12
Second anæmias ..	2·1		
Rheumatoid arthritis	1·8		
Debility	1·8		

to any clinical entity, but is apparently related to the degree of acidity, since the emptying time increases as the average acidity rises. This, according to the findings of J. M. H. Campbell, and J. J. Conybeare,[2] is the reverse of what happens with the heavy barium meal. The determination of the emptying time in relation to secretion is important, because the findings give an indication of the type of operative procedure to be used. In the present series, broadly speaking, three kinds of operation were done for the gastric and duodenal cases—gastro-duodenostomy

gastro-jejunostomy, and gastro-jejunostomy with a partial gastrectomy. The first operation (Finney's) was only done in cases of duodenal ulcer and in one case of spasmodic obstruction; the after-results of this operation are still in dispute, but if the object of the operation is the same as in gastro-jejunostomy—i.e., to decrease gastric acidity by free regurgitation and to increase the rate of emptying—it is not remarkably successful. In no case examined post-operatively was the acidity found markedly decreased, and in several cases it was actually higher. In not a single case was the emptying time decreased. In one case it remained the same and in the others it was actually increased; in fact, in three cases there was still food debris in the stomach after 12 hours' fasting. Gastro-jejunostomy, with or without a partial gastrectomy, was performed on all the remaining gastric and duodenal cases. According to Ryle,[3] in cases with a short history, whose test-meal results show a rapid rise of acidity to a high level and rapid emptying, the operation is contra-indicated, as it frequently fails to produce a lowering of the acidity, and the stomach already empties too rapidly. In the present series all cases, whatever their previous emptying time and acidity curve, showed a marked reduction in acidity after operation. A further examination of their gastric function at a later date would be of interest.

The ratio between the sexes in the cases considered is: duodenal ulcer, 6·5 males to 1 female; gastric ulcer, 2·8 males to 1 female; new growth, 0·6 males to 1 female. Comparing these figures with the death-rate (Registrar-General's figures) from the same diseases, which show respectively a ratio of 4·8 to 1, 1·9 to 1, and 1·2 to 1, there is, with the exception of the small series of new growths, a preponderance of males in this series. This is the more remarkable as in this hospital there is always a large preponderance of female patients.

In conclusion, I should like to thank the members of the staff for permission to report their cases.

References.

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SOME EFFECTS OF

ALTERATION OF OXYGEN PRESSURE

IN THE INSPIRED AIR UPON CANCER GROWTH AND BODY-WEIGHT OF RATS AND MICE.

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THE recent researches of Warburg and his collaborators upon the metabolism of tumour cells have shown that these cells can metabolise glucose for a considerable period in the absence of oxygen, and that even their normal metabolism includes both aerobic and anaerobic processes. Warburg [1] also showed that, since cancer cells can derive energy by two different processes of metabolism (respiration and fermentation), it is necessary to interfere with both these processes if one wishes to kill cancer cells by want of energy. He tried to induce this condition by keeping rats bearing implanted tumours for 40 hours in an atmosphere containing the minimum amount of oxygen compatible with the life of the animals (5 volumes per cent. oxygen). As the result of this treatment he found that the bulk of the cells of the implanted tumour were killed. The cells at the periphery of the tumour, however, remained alive and continued the growth of the tumour, so that th treatment did not lead to a "cure." Fischer and hi collaborators [2] used the opposite method, keepin tumour-bearing rats under increased oxygen pressure They based this procedure on the observation that i tissue culture cancer cells can be killed by increasin the oxygen tension. By keeping mice with tumours i practically pure oxygen for 18–24 hours unde 1·6–2 atmospheres of pressure they succeeded i bringing about a disappearance of the tumour in considerable number of animals, but only if th treatment was applied during the first week afte transplantation. Pneumonia frequently occurred i the animals thus treated, and the regression was ofte accompanied by infections of the tumours, with th formation of pus and ulceration. It is well known tha such high pressures of oxygen as those used by Fische are dangerous to man and to most animals, owing t the onset of pneumonia, as demonstrated by Lorrai Smith [3] and recently again by Binger, Faulkner, an Moore.[4] The regression of the tumours is probabl related to infections supervening upon the toxi effects of oxygen on the tumour-bearing animal The suggestion has also been made, although not b Warburg himself, that the genesis of cancer may b the direct result of an inadequate supply of oxyge which would induce potentially-malignant cells t switch over from respiration to fermentation. O that view chronic irritation leads to cancer because i produces a local oxygen deficiency. Auler [5] has recentl applied Fischer's results therapeutically to cance patients by exposing them in pneumatic chambers t increased oxygen tension, and believes that he ha obtained a temporary improvement. In order tha our results might be more directly applied to man we have used oxygen pressures within the limits o safety—that is, increased up to about 60 per cent. o an atmosphere. We have also tested very low oxyge pressures in the inspired air, the lowest average bein 9·6 per cent. of an atmosphere. Normally the oxyge pressure breathed is about 21 per cent. of a atmosphere, so that in our high oxygen pressur experiments we have increased the pressure by abou 200 per cent. above normal and in the low oxyge pressure experiments we have decreased the pressur to a level less than 50 per cent. of the normal. Thi is equivalent to an altitude of about 18,000 ft. B keeping our experiments within these limits we ha the advantage of being able to submit the tumour bearing animals to these different conditions for lon periods of time—2–3 weeks.

Technique.

The animals were exposed to the altered oxygen pressur by enclosing them in air-tight chambers which have bee fully described elsewhere [6]; these chambers were built o the principle recommended by Edie.[7] The animals wer placed in small groups in the usual boxes or cages wit more than sufficient food and water for 3–4 days, so tha the chambers had to be opened only every third or fourt day for renewal of food. This process was carried ou rapidly, so that the total period of breathing normal air a each opening of the chambers was kept below 30 minutes during the rest of the period of the experiment the animal breathed the oxygen at the desired pressure. This pressur was reached by passing through the chambers, as soon a they were closed, the proper mixtures of oxygen and nitroge to give the necessary final oxygen percentages. The oxyge percentage remained remarkably constant without muc further attention, as was shown by daily analysis of the a in the chamber by means of Haldane's apparatus. As th animals used oxygen, carbon dioxide was produced, and thi was absorbed by soda-lime placed in porcelain trays o shelves within the chambers. As the carbon dioxide wa absorbed the pressure in the chamber fell slightly, and fres oxygen bubbled in automatically from a gasometer throug a water-valve. In this way, under ordinary circumstances the whole apparatus could be left to itself for at leas 12 hours without any great change occurring in the oxyge pressure in the chamber. The barometric pressure in th chamber was about the same as that of the outside air— that is, near sea-level pressure—whilst the temperature wa kept nearly constant (about 15° C.) by attention to th heating of the rooms in which the chambers were placed The raising or lowering of the oxygen pressure was performe gradually, and extended over the first four days in eac experiment.

The animals (mice and rats) were fed on a liberal supply of a grain mixture of oats, wheat, and barley with greenstuff and a soft mixture of brown bread and "Quaker" oats, moistened with a little milk. An ample supply of water was placed in the usual receptacles suspended from the top of the cage or box. The cages were kept clean and dry by a thick layer of sawdust, whilst cotton-wool was provided for a nest.

The animals were inoculated with rapidly growing tumours, the rats with Jensen's rat sarcoma and the mice with carcinoma No. 63. Five series of experiments were carried out, each lasting about 14 days. The experiments were controlled by keeping batches of rats and mice inoculated with the same strain of tumours under normal oxygen pressure; in many cases the tumours were weighed and charted in the usual way. In addition controls of uninoculated rats and mice on the same diet and breathing air with normal oxygen pressure were kept.

Effect of Oxygen Pressure upon the Growth of Cancer.

In previous experiments by one of us (J. A. C.) normal animals of various kinds were exposed to air containing abnormally high and abnormally low pressures of oxygen for several weeks. The after-history of the survivors, up to 18 months, has given no indication that either high or low oxygen pressure favoured the origin of cancer; one of the older mice eventually developed mammary cancer, but this occurs in mice which have never been exposed to altered oxygen pressure. In the present research we have exposed inoculated rats and mice to high oxygen pressure, and other similarly inoculated rats and mice to low oxygen pressure. The results for the high oxygen pressure (about 57 per cent. of an atmosphere) are given in Table I., whilst the results for the low oxygen pressure (about 11 per cent. of an atmosphere) are shown in Table II.

TABLE I.—*High Oxygen Pressure Experiments; Effects upon Inoculated Rats and Mice.*

Experiment No.	Duration, days.	Animals. Used.	Animals. Died.	Tumour inoc.	Av. O_2 inspired per cent. atmosp.	Av. weight of surviving animals (g.). Before experiment.	Av. weight of surviving animals (g.). After experiment.	Av. weight of surviving animals (g.). Per cent. difference. Including tumour.	Av. weight of surviving animals (g.). Per cent. difference. Excluding tumour.	Av. weight of tumour (g.).
1	14	6 r.	0 r.	J.R.S.	55·3	40·3	49·8	+23·5	+ 3·2	8·2
2	13	4 r.	0 r.	J.R.S.	59·2	37·6	49·9	+32·7	+ 8·5	9·1
3	14	12 m.	5 m.	No. 63	55·3	19·3	23·6	+22·3	+17·1	1·0
4	13	12 m.	5 m.	No. 63	59·2	13·5	18·3	+35·5	+24·4	1·5
				Av. ..	57·2	—	—	+28·5	+13·4	—

TABLE II.—*Low Oxygen Pressure Experiments.*

1	14	6 r.	4 r.	J.R.S.	10·4	50·5	43·5	−13·8	−25·1	5·7
2	13	4 r.	2 r.	J.R.S.	12·1	51·0	41·7	−18·2	−26·9	4·5
3	14	12 m.	8 m.	No. 63	10·4	18·9	16·7	−11·6	−14·3	0·5
4	13	12 m.	6 m.	No. 63	12·1	15·7	15·1	− 3·8	− 9·5	0·9
				Av. ..	11·2	—	—	−11·9	−18·9	—

r. = rats; m. = mice.

As judged by weights and charts the tumours in the high oxygen experiment grew at about the same rate as the controls for both rats and mice, so that high oxygen pressure does not greatly affect the growth of the very rapidly growing tumours as compared with the controls. On the other hand, tumours of the same strain in the low oxygen pressure experiments (Table II.) showed definitely slower growth than either the tumours under high oxygen pressure (Table I.) or the tumours of the controls. It will be seen that under high oxygen pressure the rat tumours weighed on the average about 8–9 g. and the mouse tumours 1–1·5 g., whilst under low oxygen pressure the tumours in the rats weighed only about 5 g. and those in the mice 0·5–0·9 g. It is of special interest to note that the tumours under low oxygen pressure were much more extensively necrotic, and most of them showed areas of congestion and hæmorrhage. The effect of low oxygen pressure upon the growth of the Jensen rat sarcoma was confirmed by Experiment No. 5 (Table III. and Chart 1) in which glucose was added to the drinking water in one batch of normal and one batch of tumour-bearing rats.

In this experiment the average weight of tumours for two batches of six rats kept under low oxygen pressure was 10·7 and 5·7 g. respectively, whilst the average weight of the control tumours under normal oxygen pressure was 28 g. The inhibitory effect of low oxygen pressure upon the cancer cells is accompanied by a general effect of low oxygen pressure upon the tissues of the body. This is seen clearly by studying

TABLE III. (Expt. No. 5).—*Effect of Glucose on Normal and on J.R.S. Inoculated Rats Exposed to Low Oxygen Pressure (av. = 11·5 per cent. atmos.) for 15 Days.*

No. of rats.	Deaths.	Fluid. Supplied.	Fluid. Amount consumed c.cm. per diem per animal.	Av. weight of surviving animals (g.). Before experiment.	Av. weight of surviving animals (g.). After experiment.	Av. weight of surviving animals (g.). Per cent. difference. Including tumour.	Av. weight of surviving animals (g.). Per cent. difference. Excluding tumour.	Average weight of tumour (g.).
6 norm.	3	H_2O	0·72	40·4	36·5	—	− 9·6	—
6 ,,	0	5% gl.	4·82	40·7	32·3	—	−20·6	—
6 inoc.	0	H_2O	0·72	41·9	46·3	+10·9	−14·8	10·7
6 inoc.	1	5% gl.	3·85	40·2	39·7	−1·2	−15·4	5·7
						Av. ..	−15·1	

gl. = glucose.

CHART 1.

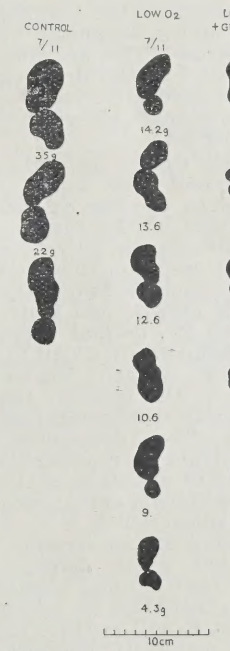

CHART 2.

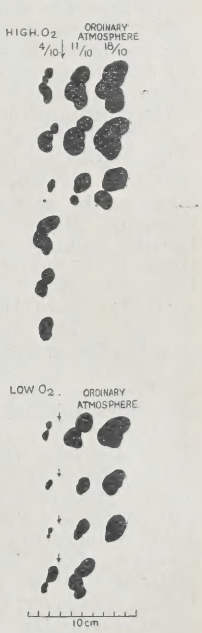

CHART 1 (Expt. 5).—Growth of the Jensen rat sarcoma from Oct. 21st, 1927, to Nov. 7th, 1927, under normal conditions ("control"), under reduced oxygen pressure with and without the addition of glucose to the drinking water. The figures underneath the charted tumours give the weight of each tumour in grammes. The charts illustrate the marked retardation of growth during the exposure to lower oxygen pressure.

CHART 2 (Expt. 3).—Growth of the mouse carcinoma 63 under high and low oxygen pressure from Sept. 20th, 1927, to Oct. 4th, 1927. From Oct. 4th to 18th the animals were kept under normal atmospheric conditions. The chart illustrates the marked retardation of growth under low oxygen pressure as compared with the usual rapid growth during high oxygen pressure. It also shows the resumption of normal rapid growth when the low oxygen pressure was replaced by normal oxygen pressure.

in detail the effects upon weights of the normal body tissues of the animals.

Effect of Oxygen Pressure upon Body-weight in General.

In previous experiments [4] it was shown that normal rats and mice tolerated high oxygen pressure up to 60 per cent. of an atmosphere, and did not appear to be greatly affected as regards body-weight and metabolism. On the other hand, normal rats and mice were adversely affected by prolonged exposure to low oxygen pressure, losing at least 20 per cent. of weight in a few weeks, partly owing to loss of appetite. The low oxygen pressure appeared to affect the heart in particular, and the organs of those animals that died during the experiment showed changes due to marked congestion caused by heart failure. The animals which survived these experiments recovered their good health when they were placed under normal conditions again.

This adverse action of low oxygen pressure was seen in the present research. Under low oxygen pressure (Table II.) the animals lost 18·9 per cent. of their body-weight, whilst in Table III. the loss was about 15 per cent.; these figures are exclusive of the tumour weights. Under high oxygen pressure the animals gained (Table I.) about 13·4 per cent. of body-weight, so that in these experiments the total loss in body-weight due to low oxygen pressure was about 30 per cent. when compared with the high oxygen pressure figures. It must be remembered that the animals were young growing animals, and the increase in weight under high oxygen pressure was simply due to this and not to the high oxygen pressure. The controls under normal oxygen pressure also showed on an average well over 10 per cent. increase of body-weight in two weeks. The animals under low oxygen pressure did not develop any infections.

An attempt was made to counteract the harmful effect of low oxygen pressure in the organism by increasing the consumption of glucose. This was done by dissolving glucose (5 per cent.) in the drinking water. Although this led to a considerable increase in the consumption of fluid by the animals, no evidence was obtained that they were benefited.

The effect on the growth of the tumour as well as that on the tumour-bearing animal lasts only so long as the animals are exposed to the low oxygen tension. In one experiment some of the tumour-bearing animals were allowed to remain alive for three weeks under normal conditions, after they had been subjected to low oxygen tension for two weeks with the usual effect on tumour growth and body-weight. The tumour resumed its normal rapid growth, the animals improving temporarily (Chart 2). In so far as exposure to low oxygen tension produces an extensive necrosis of the tumour, the effect is permanent, but in almost all general conditions studied up to now, as, for instance, dietetic deficiencies, the malignant tissue has exhibited a remarkable independence of the general state of nutrition of the host. Thus, as is well known, a malignant new growth will continue to grow in an organism which is itself dying of inanition. Exposure to low oxygen tensions, however, is a general condition which damages malignant tissue more severely than normal tissue. It has, moreover, this advantage, that since its action extends over the whole organism it will produce its effect on malignant tissue in its metastatic deposits. Unfortunately, it does not damage it so completely as to be of therapeutic value by itself, for since a fraction of the malignant cells survive they resume their growth when normal conditions are re-established.

Summary.

1. Rapidly growing implanted tumours in rats and mice show a greatly diminished rate of growth during prolonged exposure (two weeks) of the animals to low oxygen pressures. This is accompanied by extensive necrosis of the tumours. This confirms the observations of Warburg and his collaborators. Exposure to high pressure of oxygen (60 per cent. of an atmosphere) produces no effect on the tumours.

2. The decrease in rate of growth of the tumour which occurs under low oxygen pressure is accompanied by a decrease in growth of normal body tissues.

3. So far as the experiments go there is no evidence that alterations—within the limits of safety—of oxygen pressure in the inspired air are by themselves of therapeutic value.

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SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

The Glasgow V.D. Bill.

LAST week the Glasgow Corporation followed the example of the Edinburgh Corporation in adopting by a large majority the draft of a Bill to make further provision for the prevention, notification, and treatment of venereal disease. The Bill represents the end-result of seven years' hard work during which conferences have been held with the sanitary authorities of all the Tyneside burghs and the neighbouring counties. Dr. James Dunlop, Convener of the Subcommittee on the Treatment of Venereal Disease, informed the Corporation that there were 100,000 persons infected with venereal disease within the limits of the city, of whom 75 per cent. were innocent sufferers. Whereas, he said, in contradistinction to tuberculosis, cure could be guaranteed to the persistent patient, it was a fact that one-half of the male patients discontinued attendance before they were free from the risk of conveying infection. The Bill places upon any person who has contracted venereal disease the responsibility for continuing treatment so long as the disease is deemed to be in an infective condition. Should a patient discontinue treatment, the medical practitioner becomes responsible for notifying the case to the medical officer of health, who then requests the affected person to resume treatment. Should he fail to comply he becomes liable to prosecution or removal to hospital on a magistrate's order. The medical officer of health may also require any person who he has reason to believe is suffering from venereal disease, and not under treatment for it, to submit to treatment or produce medical evidence that he/she is not so suffering. In dealing with newly born children suffering from ophthalmia or older children with congenital syphilis, the practitioner must inform the parents, should he have reason to believe that either of them is suffering from venereal disease, but may withhold disclosure of the fact if he is satisfied that the parents' state of health justifies his abstention. The Bill was opposed at the Council meeting by Bailie Miss Snodgrass, who stated that the voluntary principle was having good effect, and that to depart from it and introduce an element of compulsion would prevent people from submitting voluntarily to treatment, and thus lead to concealment of disease. But the amendment which she proposed to refer the draft Bill back to the Committee was supported by only two other members of the Council. Dr. Robert Forgan stated in the course of the discussion that 115 out of 123 doctors in the West of Scotland whom he had approached were in favour of further powers being granted. Progress with the Bill will now depend on the fate of the Edinburgh Bill.

THE ROYAL COLLEGE OF SURGEONS AND CANADA.

THE QUESTION OF AN IMPERIAL DIPLOMA.

SOME two years ago the Canadian Medical Association, which is anxious to improve the standard of medical education in the Dominion, invited the Royal College of Surgeons of England to consider whether means could not be found to make it easier for Canadian graduates to attain the Fellowship of the College. It was pointed out that expenditure of time and money on a journey to London was often prohibitive, and it was suggested that examinations should be held in Canada. Last May the Council of the College decided that "it is desirable to send examiners to the Dominions to conduct a Primary Examination for the Fellowship, of the same standard as the examination in this country . . . provided that satisfactory arrangements can be made." After negotiation with the Canadian Medical Association a scheme has been approved whose provisions are as follows :—

1. The Canadian Medical Association to be appointed the authority in Canada representing the Royal College of Surgeons in connexion with the proposed examination, and to be responsible for the arrangements to be made in Canada to enable the Examiners of the College to conduct the examination in that country.

2. An examination to be held by the College at Toronto at the end of July or in August, 1929, provided that it is notified to the Secretary of the College not later than May 1st, 1929, that there are such a number of eligible candidates desirous of being examined as may be agreed by the College and the Canadian Medical Association as sufficient to warrant the holding of an examination in Canada.

3. Two Examiners in anatomy and two in physiology, who shall be present or past members of the Board of Examiners in Anatomy and Physiology for the Fellowship, to be sent by the College from England.

4. A professor of anatomy and a professor of physiology, or such other persons as may be nominated, to be appointed by the College from names submitted by the Canadian Medical Association to act as assessors to the Examiners.

5. The examination, written and viva voce, of each candidate in each subject to be conducted by two English Examiners and one Canadian assessor.

6. The Canadian Medical Association to be invited to appoint suitable persons to visit and inspect the examination.

7. The questions for the written paper in Canada to be set by the Board of Examiners in Anatomy and Physiology for the Fellowship at the same time as those for the written paper for the June examinations in England, and to be taken to Canada by the Examiners sent from England.

8. The written paper examination to be held on the arrival of the Examiners in Canada, and the viva voce examination as soon after as convenient.

9. The result of the examination to be determined and announced by the Examiners in Canada on the completion of the examination.

10. Notice of the date and place of the examination to be given in the *Journal of the Canadian Medical Association* and in such other way as may be thought desirable.

General satisfaction will be felt at the forging of this link between surgical practice in England and the Dominion of Canada. If extended to other parts of the British Empire, the arrangements would help to establish the Fellowship as an Imperial diploma for post-graduates, and would raise the general standard of practice. The alternative is for each of the States of the Empire to set up its own standards and institutions without reference to the rest—a tendency illustrated by the recent formation of the Surgeons of the College of Australasia. The success of this alternative depends on the wisdom with which new traditions are established and on the enthusiasm with which they are inspired. National institutions have the merit of commanding national interest, and competition between them is undoubtedly healthy; on the other hand, a common organisation does something to promote a valuable community of thought among workers in the same field.

Public Health Services.

THE N.H.I. AMENDING BILL.

DISCUSSION ON SECOND READING.

(FROM AN OCCASIONAL CORRESPONDENT.)

YOU were well advised in giving so large a space in your last issue to the debate on the National Health Insurance Bill, for the second reading of any Bill in the House of Commons is generally used as the means of informing the public what are the principles involved in the Bill. And the public are in dire need of enlightenment on the further development of an insurance scheme which has already made so profound a change in medical practice and is likely as time goes on to have still greater an effect in modifying the work of the general practitioner. The scope of the Bill is very limited, but it must not on this account be regarded as unimportant. The primary object of all legislation which alters the administrative machinery of the Insurance Act should be the promotion of the health of the insured person. Provision of adequate treatment in illness, speedy restoration to normal working capacity, and prevention of sickness amongst the workers are all objects well within the scope of the original Act, and there seems to be a serious danger of these objects being overlooked in the consideration of the interests of the various authorities administering the scheme. The Bill, in fact, is disappointing as a step in the development of the insurance scheme, though certain clauses are to be welcomed. It is true that the arrears scheme does mitigate the hardship of the unemployed insured person to a satisfactory degree and materially helps the approved societies in the administration of benefit. The improvement in the condition of the Deposit Contributors' Fund, whereby the benefits obtainable by "bad lives" will approximate more closely to those of the ordinary insured person, is all to the good. An important move is made in Clause 14 (3) which empowers the Minister to make regulations for the administration of additional benefits, and provides against such an inrush of new members to any society offering some attractive scheme as might prejudicially affect its financial position.

The administration and regulation of any additional benefits that may be offered by a society is likely to be a thorny point. In this connexion Clause 14 is strongly opposed by the approved societies. A letter circulated to Members of Parliament by the Association of Approved Societies says "the Bill is also designed to interfere with the self-government of societies by their members and to substitute therefor the bureaucratic fiat of the Department." Neither does this clause find favour with the insurance committees. If any of these additional benefits become statutory they should be administered by insurance committees like general medical benefit, and it is feared that Clause 14 in conjunction with the repeal of Section 75 (5) of the 1924 Act will prejudice the rights of insurance committees in the future. Section 75 (5) of the 1924 Act provides that : "Additional benefits shall be administered by the society or branch of which the persons entitled to benefits are members, except where the benefits are in the nature of medical benefit, they shall be administered by and through the insurance committees." The third schedule of the present Amending Bill repeals the section just quoted "as the Regulations to be made will make provision for the manner in which the several additional benefits are to be administered" (see p. 13 of the explanatory memorandum). It is possible to conjecture from all this how varied and mutually opposed are the claims of the various bodies who take part in the administration of the Act.

The political interests involved probably explain much that has been left out of the Bill. After the passing of the Economy Act in 1926 it was natural to attribute the shortcomings of any legislation or action

of the Ministry to the lack of funds. But in the course of the debate it was definitely stated by the Parliamentary Secretary on behalf of the Ministry that "but for the opposition of the approved societies of the country it would be perfectly possible to put into operation the scheme of the specialist services without bringing any additional funds into the national insurance system at all." The Royal Commission stated that if the approved societies could agree to pool their funds the scheme could be put into immediate operation. It is clear, therefore, that the Government have had considerable difficulty with the vested interests, and this is probably the real explanation of the fact that two of the most important recommendations of the Royal Commission are left out of the Bill—namely, the pooling of surpluses and the abolition of insurance committees. The Economy Act may have had a direct influence, for it was pointed out that the amount available for investment by the societies fell from £8,000,000 in 1925 to £200,000 in 1927, and it was on the interest from these investments that the additional benefits depended. The extension of maternity benefit to cover medical and midwifery services, the extension of the scope of medical benefits to the dependents, and the provision of specialist services and laboratory facilities, all highly desirable, are apparently blocked by the failure of the societies to agree to a unified administration with the pooling of funds. It is interesting that in certain areas—for example, in South Wales—the much criticised medical aid institutions (which could be approved under the Insurance Act) are providing a more extended service; this includes expert advice, special treatment, laboratory facilities, dental and ophthalmic treatment, and professional nursing.

It is time that a long view should be taken of the economics of national health insurance. Any development which increases the facilities for improved diagnosis and prompt and adequate treatment would be an economical move. The experimental dental clinic which is to be set up in certain areas may be an important indication as to future activities.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1927 statistics of the County Borough of Reading and Borough of Poole:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Reading .. .. (94,660)	15·3	12·3*	0·99	1·27	2·1	1·6	42/25	2·7	2·1
Poole .. .. (51,030)	17·5	12·3*	0·71	1·45	2·4	1·4	58/33	4·5	0·0

* The standardised death-rates of 10·7 for Reading and of 10·3 for Poole may be compared with the rate of 12·3 for England and Wales.

Reading.

Dr. H. J. Milligan reports that the infant mortality is lower than it has ever been before. The improvements to the maternity home have been completed and have greatly added to its efficiency. The extensions to the isolation hospital have also come into use. A joint committee representing the county borough council, the board of guardians, and the Royal Berkshire Hospital have gone into the question of the hospital accommodation of the borough. The principal deficiency found was a lack of beds for acute surgical cases. The Royal Berkshire Hospital propose to establish a branch hospital with immediate accommodation for 60, and capable of expansion to provide for 240. This branch hospital will provide for diseases of bones and joints, which at present occupy beds for long periods, and also open-air treatment for post-operation cases. The joint committee agreed that the present coöperation between the various hospital authorities was quite satisfactory.

Paratyphoid fever was unusually prevalent from May to December. There were 44 notifications and no deaths. No special reason could be assigned for the prevalence except the passing on of infection by mild and "missed" cases. There were also six notifications of true enteric fever of the severe type with two deaths. Towards the latter end of the year a very grave form of diphtheria appeared. There were 74 notifications and 17 deaths, giving a case-fatality of 23 per cent. Between October, 1927, and February, 1928, 64 diphtheria patients were admitted to the isolation hospital, of whom 14 died. Of those who recovered, 16 suffered a long illness with complications such as marked toxæmia and paralysis. Of the patients who died the disease had usually reached the fourth or fifth day before admission to hospital, too late for antitoxin to be of any avail. The Borough of Reading Medical Society, Ltd., and the Reading Public Dental Service, Ltd., provide medical and dental treatment for the dependants of insured persons and others whose incomes do not exceed £250 per annum. At the Tuberculosis Dispensary, out of 73 contacts examined, one was found to be suffering from non-pulmonary tuberculosis, 19 showed suspicious symptoms, or signs needing continued observation, and 53 showed no clinical signs of infection. At the V.D. Clinic the new cases of syphilis continue to decline. In 1927 there was a sudden drop in the congenital cases, which Dr. Milligan thinks is due to the cases not being sent to the clinic as freely as before, rather than to an actual decline in the cases. In the 1927 returns there is a new heading for 21 patients who left off treatment before being cured and returned after six months or more for further treatment.

A table shows that since 1905 the neonatal mortality has declined from about 35 to 25, the infant mortality from bronchitis and pneumonia from 17 to the neighbourhood of eight, and that from gastro-intestinal diseases from 17 to the neighbourhood of three. Dr. Milligan reports that antenatal supervision is being carried out efficiently by the younger and more highly trained midwives, and that those midwives who are not capable of doing this work themselves, encourage their patients to attend the antenatal clinic. The antenatal clinic was attended by 250 new patients, who made 999 attendances. A record is now made of the blood pressure of all patients attending this clinic.

Of 55 samples of milk examined bacterially four were found to contain living tubercle bacilli. In three of the cases the infected animal was traced and destroyed. The housing committee has had under consideration the question of slum property. During the last seven years 62 slum houses, representing one-fifth of those recommended for demolition, have been demolished. Owing to the house shortage it is not possible to deal with the others, or to find a remedy for overcrowding in most cases. The municipal houses completed numbered 332 and subsidy houses 148, but the level of the years of moderate building activity before the war has not yet been attained. The school report especially emphasises the difficulties of the dental scheme owing to a quite inadequate staff.

Poole.

Dr. R. J. Maule Horne reports that a considerable proportion of the 499 new houses have been erected in semi-rural districts, which were unsewered, and that in many cases the road access to these houses is precarious. As a result the number of cesspools which the health department has to empty, has increased from 490 in 1906 to 610 in 1927. An additional 100 cesspools expected in 1928 will increase the difficulties of the cleansing department. A year ago the housing shortage was estimated at 518. A

ıe end of 1927 it was estimated at 309. Dr. Horne ould like to see a model lodging-house erected, pecially for the accommodation of visiting seamen. Energetic efforts are made to cope with rats, both the borough and port, but the refuse tips add to ıe difficulty of dealing with them. At the present me tipping is used for reclaiming land, but Dr. orne hopes that the reclamation scheme will soon e complete and a more sanitary method of refuse sposal adopted. Spraying with paraffin is adopted r the fresh-water lakes and ponds in order to ep down the mosquitoes, and attention is given to eping the water courses clear and avoiding sluggish -pools. Dr. Horne presses for a public abattoir. considerable proportion of the butcher meat nsumed in Bournemouth is killed and dressed in e Poole slaughter-houses, which number 12, and e scattered over an area of some 12 square miles, us rendering inspection very difficult. Late in e year the Southern Sea Fisheries' district committee issued licences for the dredging and relaying 50,000 oysters. There are now some 200,000 rsons living close to the shores of the harbour and consequence the oysters have to be relaid at ipstal, in the Arne reach of the harbour. The se season extends from May 15th to Sept. 30th. A table for the years 1907 to 1927 shows that ere has been during that period an even greater duction in the child-mortality from one to five years an in the infant mortality-rate. Thus, in the rlier years of that period the one to five years ild deaths were over 40, whilst during the last ır years they have been 21, 20, 11, and 9 respectely. The infant deaths, on the other hand, ring the earlier years were in the neighbourhood 80, and during the last five years they have varied m 46 to 60.

FECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 7TH, 1928.

Notifications.—The following cases of infectious ease were notified during the week :—Small-pox, 3 (last week, 322) ; scarlet fever, 1622 ; diphtheria, 30 ; enteric fever, 32 ; pneumonia, 1345 ; puerperal er, 52 ; puerperal pyrexia, 103 ; cerebro-spinal er, 6 ; acute poliomyelitis, 7 ; acute polioephalitis, 1 ; encephalitis lethargica, 29 ; contued fever, 2 ; dysentery, 23 ; ophthalmia natorum, 99. No case of cholera, plague, or phus fever was notified during the week.

The cases of small-pox were notified from the following counties : London, 1 ; Bedford, 7 ; Chester, 2 ; Derby, 6 Durham, 92 ; Gloucester, 2 ; Kent, 1 ; Lancaster, 35 ; coln, Parts of Lindsey, 1 ; Middlesex, 1 ; Norfolk, 1 ; thumberland, 13 ; Nottingham, 2 ; Stafford, 3 ; rey, 1 ; Warwick, 7 ; Yorks, North Riding, 3, West ing, 69 ; Glamorgan, 38 ; Monmouth, 33.

The number of patients in the Infectious Hospitals of the ropolitan Asylums Board on April 10th–11th was as ows : Small-pox, 7 under treatment, 4 under observa- ; scarlet fever, 1601 ; diphtheria, 2368 ; enteric r, 31 ; measles, 1542 ; whooping-cough, 136 ; puerperal r, 16 (plus 15 babies) ; encephalitis lethargica, 66 ; er diseases, 31. At St. Margaret's Hospital there were ases of marasmus, and 14 babies (plus 6 mothers) with thalmia neonatorum.

Deaths.—In the aggregate of great towns, including ndon, there was no death from small-pox, 3 (2) from eric fever, 144 (82) from measles, 5 (1) from scarlet r, 41 (6) from whooping-cough, 44 (13) from htheria, 34 (8) from diarrhœa and enteritis under years, and 108 (6) from influenza. The figures arentheses are those for London itself.

f the 62 fatal cases of measles outside London, 7 were rted from Willesden, 5 from Sheffield, 4 each from t Ham and Salford, and 3 each from Brentford and wick, Plymouth, and Manchester, while the figures in burgh, Glasgow, and Dublin for the same week were , and 9. Of the 35 fatal cases of whooping-cough, ch were reported from Birmingham and Liverpool, and m Newport (Mon.).

number of stillbirths registered during the week 258 in the great towns, including 46 in London.

Correspondence.

"Audi alteram partem."

HAS THE CAMPAIGN AGAINST VENEREAL DISEASES BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—The statement in your last issue (page 773) that medical authorities in Edinburgh, after an exhaustive trial, are convinced that the "voluntary system cannot control or eradicate venereal disease in a reasonable time . . . and they are of the opinion that it must be reinforced by compulsion," has raised, in an acute form, the fear that has been worrying us in England for some time, that all is not well with the scheme promulgated by the Ministry of Health in 1917. Venereal disease is not diminishing in England. During the last three years, for which figures are available (1924–26) syphilis has remained stationary around 22,000 per annum, and gonorrhœa increased from 30,000 to 35,000. If this increase meant that more cases attended the clinics, because they knew of the facilities for treatment, it would be a matter for congratulation. But apparently, in Edinburgh, they do not think so, and in this I am inclined to agree.[1] Instead, they stress the point that of the annual 3000 who attend their clinics, about 33 per cent. default before cure ; and to this they attribute the persistency with which the numbers keep up. It is to deal with these defaulters, and the other cases which never come to any qualified source for treatment, that they wish to obtain compulsory powers.

It may be interesting, then, to compare the figures in Edinburgh with those in London for the same period, and see what we can deduce from them. In 1921 the total attendances in London were 19,368. In 1926 they had dropped by 8 per cent. to 17,724.[2] Analysing these figures one finds that the diminution is entirely due to the fact that syphilis dropped from 8188 to 5738, whereas gonorrhœa rose from 10,709 to 11,683. Here, I think, we can put our finger on the weakness inherent in the scheme originated by the Ministry of Health. That weakness is that the conditions governing the successful treatment of syphilis and gonorrhœa are radically different.

Syphilis is a disease that readily lends itself to out-patient treatment. With the powerful arsenicals now at our disposal we are able, temporarily, to render patients non-contagious from the public health standpoint with extreme ease and rapidity. This is what the Ministry aimed at ; for it was not out, primarily, to cure syphilis, but to treat it in the "early and communicable" stage—in other words, to render it non-contagious. In practice, of course, it is not desirable to stop at this stage. The clinics have not done so, nor have the Ministry objected in any way, though this prolongation of treatment is not inherent in the scheme, which is essentially drawn up from the view-point of the public and not the individual. Luckily, even with this extended view, a weekly or bi-weekly attendance at a venereal clinic is amply sufficient for the vast majority of cases of syphilis.

In the cure of gonorrhœa, however, we are not in anything like as happy a position. Here out-patient treatment is but a poor substitute for in-patient care, even in males, as everyone with knowledge of the work in the Services will agree. Treatment, moreover, is much more complicated in gonorrhœa than in syphilis ; there is a much greater loss of working time owing to the frequent necessity of attendance daily for irrigations, &c. ; and, worst of all, the period of infectivity has not been diminished appreciably in the last 20 years, simply because we have nothing

[1] Edinburgh Corporation Bill, 1928. Venereal Diseases. Statement for the Corporation. Beveridge and Co., 23, Abingdon-street, S.W. 1.

[2] L.C.C. Annual Reports, 1926, Vol. 111.

in our armamentarium against gonorrhœa comparable to arsenic in syphilis. Defaulting, therefore, is much more common, and gleet is still the greatest bugbear we have to contend with. When we come to consider the treatment of gonorrhœa in the female, we find that we are still worse off. Gonorrhœa in the female is a most intractable disease. It has been asserted that it is incurable. This is nonsense; but the fact remains that, as far as out-patient treatment is concerned, cure is exceedingly difficult. From the public health standpoint this is a most unfortunate circumstance, because one woman can infect 100 males in less than a year, and, with the best out-patient treatment, infectivity may last in women for years. Women require, even more than men, physical as well as sexual rest to permit of cure.

The Ministry of Health has devoted its energies largely to providing facilities for out-patient treatment. This was the obvious first step. If defaulting were not so frequent, it is probable that syphilis would now be very much diminished by this means. But with gonorrhœa, especially in the female, I am convinced that only a great increase in the provision of in-patient treatment will produce any appreciable improvement. Gonorrhœa in women appears to be steadily increasing in London—2136 applied for treatment in 1921, 2858 in 1926—and yet nothing practically has been done to provide them with the necessary in-patient accommodation. There were 150 beds at the London Lock Hospital in 1914. This number has not been increased; and no other hospital in London has made any adequate attempt to supply the deficiency. Certain hostels, it is true, have been provided where patients under out-patient treatment could sleep. Apart from the fact that rest and proper supervision cannot thus be provided, the numbers using these hostels have been too few to affect the main contention. I consider that at least 500 beds are required adequately to tackle the problem of gonorrhœa in women in London. Until this has been done it is difficult to see how one can possibly hope to stem the steady increase of gonorrhœa in both sexes that we are up against at the present moment.

It is to be hoped that the statement that the Government will oppose the second reading of the Corporation of Edinburgh's Bill is inaccurate. The Bill ought to have a fair chance. It is backed by the weight of medical opinion all over Scotland. Edinburgh is a favourable centre on which to base such an experiment. Obviously the scheme as at present administered in England is not the success we have the right, with all our hard work, to expect. We should learn much from the success or failure of the Edinburgh scheme. It is to be hoped that the Ministry of Health will not persist in its non possumus attitude, but will give the Bill the chance that it deserves.—I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Harley-street, W., April 14th, 1928.

GASTRO-DUODENAL ULCERATION.

To the Editor of THE LANCET.

SIR,—It would be a calamity if the profession at large was lulled into a state of false security by such statements as "alkalosis is a bogy which need not be feared," especially when uttered in high places, and my excuse for reopening the correspondence on this subject is to emphasise the dangers alluded to by Dr. Hurst in his letters of March 3rd and 17th by recording in some detail the following experience which has occurred, aptly enough, in a patient undergoing treatment for duodenal ulcer on the lines laid down by Prof. MacLean and his associates.

Mrs. X, a woman of 48, had her right kidney removed for hydronephrosis in 1914. Two years later symptoms suggestive of duodenal ulcer made their appearance and continued off and on till 1924, when the diagnosis was confirmed by X ray examination, and she underwent a course of medical treatment at home under the direction of my colleague Dr. A. P. Thomson, who tells me that he made a note in April of the same year, "Cannot take alkalis well ? Kidney." The symptoms were not severe, and the u was free from albumin. She remained well for some mon being able to take alocol and a nightly dose of milk magnesia, but she then broke down again, attacks of typ ulcer distress alternating with periods of relative calm unti January of this year she heard of the results claimed by P MacLean and his associates. Under the impression that h in the outer darkness, we were unfamiliar with this rec development in ulcer therapeutics, she consulted a w known practising physician in London from whom detail the treatment were obtained, an opinion being expressed the consultation that her previous nephrectomy was nc contraindication. The complete régime was sent to private doctor, under whose care she entered a nursing h on March 13th. I saw her for the first time on Fri evening, March 16th, the treatment having then been progress four days. Toxic symptoms had appeared March 14th, when she complained of headache wh increased in severity during the next 24 hours, and the following evening she began to vomit her feeds. March 16th she appeared desperately ill; there was comp anorexia, constant nausea, and an inability to retain food, the headache remaining severe. At this time the u contained a moderate cloud of albumin, and granular c were fairly numerous in the centrifuged deposit. The bl pressure was 185/95. The vomit was acid, the readi being 26 for the free HCl, and 42 for the total acidity. removal of all alkalis and the substitution of rectal sal containing glucose and calcium chloride for mouth feed brought about a rapid improvement in her condition, within 24 hours she was free from urgent symptoms. blood-urea examined after 24 hours' starvation was 93·6 per 100 c.cm; a week later 69·1, and at the time of writ April 11th, 35. The urine became free from albu within 48 hours, and casts are no longer present. The u concentration test, carried out by Calvert's method April 6th, gave urea readings (*a*) 3·1 per cent. (*b*) 0·774 cent. The blood pressure also fell rapidly, and has 135/85 for the past fortnight.

I have recorded this case in detail because illustrates the possibility of occurrence of t symptoms from alkalis in a patient in whom renal function is normal by the usual tests at disposal, and because I cannot agree that no spe supervision or knowledge is necessary in carrying this particular line of treatment. Every practitio should be aware of the manifestations which m occur as a result of the administration of large d of alkali, and while symptoms of the severity of th recorded are admittedly rare, minor disturbances I submit, not uncommon. I have used Dr. Hur modification of Sippy's régime for the past seven ye with excellent results both in hospital and pri practice, but not infrequently have had pati especially in hospital who complained of nau slight headache, and even occasional vomiting, w were relieved by reducing the dosage of alkali o substituting the insoluble neutral tribasic phosph of calcium and magnesium.

I am, Sir, yours faithfully,

Birmingham, April 11th, 1928. T. L. HARD

THE PREVENTION OF PERITONEAL ADHESIONS.

To the Editor of THE LANCET.

SIR,—In a critical analysis[1] of a recent publica of mine on the prevention of peritoneal adhesi you call attention to the fact that it would be un to interfere with the fibrin-forming function of peritoneum since it is through this function that peritoneum limits the spread of infection by agglutination to one another of contiguous fi coated viscera. And you go on to say that the w "tacitly assumes that the average surgeon w desire to see a profuse flow of serous fluid em from his abdominal drainage-tubes, inserted peritonitis, at the expense of the fibrin-forming thereby infection-localising power of the peritone This increased lymph flow, you point out, pro a suitable medium for the growth of streptoc the common cause of peritonitis, and because v very fluidity prevents the migration of leucocyt

[1] THE LANCET, Jan. 21st, p. 144.

These suggestions and criticisms would be logical
d just if I had suggested the routine prevention
fibrin formation in peritonitis. In my paper I
licated a method, proved experimentally, for
eventing the encapsulation of drains inserted in
e normal peritoneum, and in the presence of a so-
led chemical peritonitis, produced by tincture of
line. I stated the opinion that the method had
ssibilities in the treatment of bacterial peritonitis.
the present time I am carrying on the second
ase of this work, dealing with the bacterial peri-
nitis. It is not my intention to prevent fibrin
rmation and thereby increase the area of peritoneum
volved in the infective process. I believe that it
uld vastly increase the mortality from peritonitis
re we routinely to prevent or interfere with fibrin
rmation. But in the virulent forms of peritonitis
idence of fibrin is frequently absent. We have
nd, experimentally, that in the most virulent form
the disease the fluidity of the exudate is greatly
reased, and there is not the slightest trace of
rin, as shown by a total absence of agglutination.
Under such conditions I believe that the use of
pertonic dextrose solution will not interfere with
most important of the normal defence mechanisms
the peritoneum. The flow from the drainage-tube,
tead of being a pure serous fluid, would contain a
ge percentage of toxic exudate. The drainage of
s toxic exudate, instead of permitting its absorption,
as much to be desired as in the case of thoracic
pyema. That the increased lymph flow provides
suitable medium for the growth of streptococci,
n this instance correct. But this increased lymph
v contains a considerable amount of dextrose.
has been shown by Kendall and others that the
ptococcus, as well as other types of virulent
hogenic bacteria, in the presence of a medium
taining dextrose, becomes converted into harmless
-producing organisms.

I am, Sir, yours faithfully,

hicago, April 4th, 1928. J. R. BUCHBINDER.

NASAL OBSTRUCTION AS A CAUSE OF DEAFNESS.

To the Editor of THE LANCET.

IR,—I think Mr. Macleod Yearsley must have
m understood me. I wrote nothing in deprecation
o resection. In fact, the second case to which I
rred in my letter was treated by the removal of
a ptal spur by an antiquated method which, although
it ave excellent results, was not comparable to a
su mucous resection. My experience has convinced
m that resection and the cautery may be supple-
m tary or alternative methods, or that either alone
m be clearly indicated. During the war I was
a pointed surgeon to a hospital reserved for officers
of he Air Force. One of the primary objects of the
ho ital was the treatment of nasal conditions; and
on of the first cases I treated was an officer who had
ha his tonsils and septum removed privately before
ad ission. He was sent into hospital because
pr nounced nasal obstruction was still evident.
Be n operations had been skilfully performed. The
re lt of a few cauterisations was to convert an
ap arent failure into a complete success. The
hi ory of that case has many times repeated itself.

n reply to the criticism that the use of the cautery
ne ssarily leads to the injurious destruction of the
se ting surface, I will describe the method I
en loy. My object is, of course, to produce not a
pa age but a scar which on shrinking will drag
th surface down to the bone. I use a fairly sub-
st tial platinum wire (about 1 mm. in diameter)
as cautery point. Owing to the movements of
th hand this creates a wound about 2 mm., or
po bly 1/10 in. in width. If a vertical section were
ma e through the middle of one of the nasal fossæ,
an a narrow strip of mucous membrane were removed
at he site of section, it would measure between 5 and 6 in., and the greater part consist of respiratory membrane. If the area which this represents be contrasted with the scar resulting from the use of the cautery, I submit that the effect of the latter is negligible. This reasoning would be fallacious if the second criticism were valid that the surface was injured over an extensive indefinite area round the site of cauterisation. Anyone can satisfy himself that this is not so by repeating an experiment which I made to verify this point. I split the end of a small wooden match and I wound the frailest fragment of cotton-wool round one of the limbs. I then dipped it in water and laid it horizontally on the side of my first finger with the naked limb uppermost. I found that I could cauterise the naked limb through without causing discomfort. A friend measured the distance of the cautery point from my finger at the conclusion of the experiment and as far as we could judge it was the 1/12 in. The experiment revealed the advisability of using a cautery at the lowest practicable temperature. The object of the wet cotton-wool was to prevent the wood conveying heat to the finger, and to ascertain if moisture in the nose was a contra-indication to the use of the cautery.

The necessity of cilia for the maintenance of drainage depends on the angle which the surface to be drained makes with the horizontal, and whether drainage is assisted or opposed by gravity. On the upper and lower surfaces of the turbinals and on the floor of the fossæ it is necessary; but on the smooth vertical surface of the turbinal its function must be limited to filtration. In private practice the ill-effects of treatment come under observation, and shortly before the war, in verifying a cocaine account, it transpired that I had anæsthetised 1700 cases in six months. I feel, therefore, justified in asserting that ill-effects resulting from the scientific use of the cautery are exceedingly rare. The desiderata are delicacy, and that neither manipulation nor examination should be made unless both hands and instruments are effectively sterilised. This applies to the application of the cautery, but particularly to the preparation of the nose, which involves touching cotton-wool, and foot-controlled basins, which I had in both consulting-rooms, are highly desirable. I have stood behind men drying the mucous membrane and would have regarded it as a miracle if it escaped injury. The conjunctiva, if anæsthetised, would not have been similarly treated, and yet it is hardly more sensitive.

I am, Sir, yours faithfully,

H. MACNAUGHTON-JONES.

Eton-avenue, Swiss Cottage, N.W., April 15th, 1928.

TONSILLECTOMY AND RHEUMATISM.

To the Editor of THE LANCET.

SIR,—Dr. Ogilvie and I were fully alive to the criticism to which we were exposed by the small number of our cases; not that our figures were liable to error, but that our conclusions from so small a series of cases might prove unconvincing. The difficulty in assessing the value of conclusions drawn from a small number of cases lies rather in the uncertainty that the cases were a "fair sample" than in the figures themselves; and Dr. Stallybrass, whose interesting criticism of our figures appeared in your issue of April 14th, will doubtless admit that calculations of probable error are themselves fallacious when applied to small numbers.

In the death-rates shown in Table II. of our paper (of 35 tonsillectomy cases 3 died (8·7 per cent.); and of 45 non-tonsillectomy cases 6 died (13·3 per cent.)). Dr. Stallybrass calculates a probable error of ±4·8 per cent. in a difference of 4·6 per cent. I suggest that in these figures there is no possible error, and that calculations of probable error are valueless. By his paraphrase of our Table IV. Dr. Stallybrass appears to have fallen into an error which invalidates his final criticism of our figures. Table IV. was as follows.

TABLE IV.—*Rheumatic Children.*

Heart condition.	Healthy throats.	Tonsils and glands.
	Number and percentage.	Number and percentage.
Normal (27 cases)	20 (74)	6 (20)
Damaged (20 cases) ..	9 (45)	9 (45)
Cardiacs (24 cases)	8 (33)	15 (62·5)

In his paraphrase Dr. Stallybrass substituted "normal tonsils" for "healthy throats"; but since of the 20 children, with normal hearts, who also had healthy throats, 15 had had their tonsils removed, it seems to me unfair to classify them as having normal tonsils. Nor can I agree with the criticism that "this shows that the figures are sufficient to indicate that rheumatic persons with normal tonsils are definitely less likely to have developed heart disease than those with diseased tonsils. . . ." Perhaps in view of the above Dr. Stallybrass will agree with me that rheumatic children who have had their tonsils removed are definitely less likely to develop heart disease than those who have retained diseased tonsils.—I am, Sir, yours faithfully,

Birmingham, April 16th. K. DOUGLAS WILKINSON.

LECTURERS ON SOCIAL HYGIENE.

To the Editor of THE LANCET.

SIR,—Owing to the numerous calls the British Social Hygiene Council are in need of the services of additional medical men: 1. Those who would be willing to leave London and to undertake from three to ten days' lecturing with public health films in the provinces. 2. Those with experience in popular speaking willing to address general industrial audiences on problems of social hygiene in London and the Home Counties area. Full particulars are given in your advertisement columns.—I am, Sir, yours faithfully,

A. H. HARKNESS,
Hon. Medical Secretary, British Social Hygiene Council.

Carteret House, Carteret-street, S.W., April 16th, 1928.

ALLEGED OVER-PRESCRIBING.

To the Editor of THE LANCET.

SIR,—You summarised last week (p. 776) a report presented to the East Sussex Insurance Committee, criticising the procedure adopted by the Ministry of Health in the case of a panel practitioner whose prescribing exceeded the average cost for the area. I should like to give the other side of the picture. I cannot see why anyone should object to having his panel prescribing criticised by the Regional Medical Officer as often as may be considered necessary. Such an interview is vastly preferable to having one's already meagre pay docked by the Minister, or even having to attend a panel committee at a distance. Give me the R.M.O every time, especially if he happens to be the shrewd and helpful Scotsman who came down to me the other day. I do not think it is generally realised that it is one of the functions of the R.M.O. to try to make a working success of a somewhat unsatisfactory and difficult service, turning at times a blind eye to the letter of the law. These officers appear to be liaison officers rather than instruments of the unlovely panel machine. As a result of the kind advice of the R.M.O. and of a desire to save my pocket from being mulcted, I have altered my standard of prescribing. When a patient requires a valuable drug which is not in the Pharmacopœia I give him a private prescription and tell him to buy it for himself. In this way I have greatly reduced my drug bills, but where the patient is too poor or too mean to buy good drugs for himself, it takes him longer to get well, and off the hands of his society.—I am, Sir, yours faithfully,

April 17th, 1928. EAST SUSSEX G.P.

Obituary.

RICHARD LANE JOYNT, O.B.E., M.D. DUR F.R.C.S. IREL.

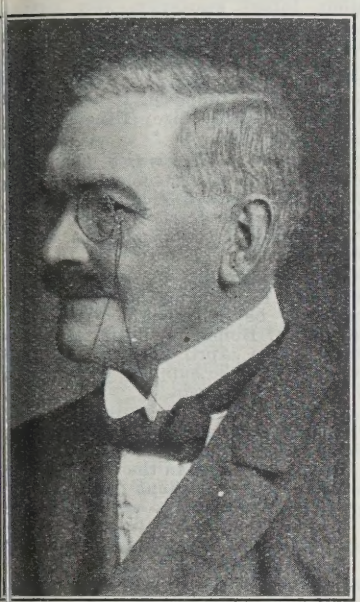
THE death of Mr. Lane Joynt occurred in Du at Easter after a few days' illness, at the age of Born in Dublin, the son of a solicitor, he was educa at Trinity College, where he graduated in 1890. proceeded to the Fellowship of the Royal Colleg Surgeons in Ireland in 1894, and subsequently was many years a member of the Council of that b Early in his professional life he was appointed assis surgeon to the Meath Hospital and for the last or five years of his life was its senior surgeon. Du all his hospital career he performed the routine du of a hospital surgeon punctiliously and competen but he was always specially interested in mechan problems. Radiography came into use while he still a junior surgeon, and he was at once attracte its great possibilities. As one of the early wor with X rays his hands became gravely affected dermatitis and for a time he was unable to per any ordinary surgical work, though nothing c make him idle. So bad did his condition become the question of double amputation was raised, but rigorous methods fortunately proved successful, a series of grafting operations carried out a yea two ago left him again with the full use of his ha This was to him of the greatest importance, for he a mechanic of rare skill, equally at home in carpe and metallurgy; an example of his ingenuity is in the note on Skin-grafting sent to THE LA shortly before his death and published on p. 81 this issue. His special choice in surgery was treatment of injuries of bone and of deformities, he was one of the early surgeons to carry out plating of fractures with metal plates. During war his real forte was found in the planning and m facture of surgical and orthopædic apparatus, ar his own workshops he organised the manufactu splints and other apparatus for the treatmen deformities, obtaining the help of many wi volunteers. Subsequently his work was offic recognised by the War Office, and he was appoi Inspector of Orthopædics with the rank of Li Colonel. His particular task was the devisin proper apparatus for dealing with unusual deform and in the more difficult cases he not only devised completed the manufacture of the article with his hands. In work of this kind surgeons throughout kingdom were glad to have his assistance.

Apart from his professional work Joynt had m interests. He loved handicrafts, he was a pi motorist and an expert yachtsman. Furthermo was a man of wide general reading, and thoroug companionable, never seeking publicity and rating his claims high. By his death the profe loses a good surgeon, a craftsman, and a ma principle.

JOHN STEPHEN McARDLE, M.CH. R.U.I F.R.C.S. IREL., J.P.

Mr. J. S. McArdle died at his residence, Me square, Dublin, last Saturday, after a long painful illness. Sixty-nine years of age, he was in Dundalk and received his early education Mary's College in that town. His immediate inte in boyhood was to become a jockey, and he was act apprenticed for a time to a trainer of race Though this idea had to be abandoned in fav his father's profession of medicine, he retained end of his life an enthusiasm for the turf. studying medicine at the Cecilia-street (Ca University) School of Medicine in Dublin he re the licences of the Royal Colleges of Physician of Surgeons at the early age of 21, and beca Fellow of the Royal College of Surgeons in I in 1884. While still a very young man h appointed to the surgical staff of St. Vincent's Ho

which institution he remained attached for the rest his life. He was also professor of surgery in the cilia-street School, and in 1903 was elected a Fellow the Royal University, which in 1900 had conferred him the honorary degree of Master of Surgery. hen the National University replaced the Royal was appointed professor of surgery in the Dublin llege. In his early days he contributed frequently the medical journals, and he wrote some useful books for students; but in later life the calls of practice were too many to leave him leisure for writing.



MR. J. S. MCARDLE.
Photograph by Lafayette, Dublin.

"As an operating surgeon," writes a colleague, "McArdle early made a name for himself, and for the last 40 years he has been one of the best known surgeons in Ireland. He was quick in decision, clear in emergency, and precise in execution. His forceful character inspired confidence. As a teacher he was probably at his best. His clearness, his force, his humour le his lessons to be remembered. But apart n his skill as a surgeon and his capacity as a her, McArdle had a great personality. In his pany one knew that he was something out of the mon. His joy of life, his verve, his greatrtedness, his boyishness, made him friends everyre and in every company. There were few men in profession who had so many friends, and he was oyal to his friends as they were to him. Ireland -day the poorer by the loss of a generous, a kindly, a lovable son."

r. McArdle was twice married, having two sons two daughters. He was a member of the Senate he National University of Ireland and President he Irish Medical Association.

CAVENDISH FLETCHER, M.B. LOND.

HE death of Dr. Fletcher on March 3rd, after a f illness, at the age of 45, removes an able exponent linical pathology. He was born in London, the of Alfred E. Fletcher, sometime editor of the *ly Chronicle*, and was brought up in an atmosphere evotion to justice and fair play which remained acteristic of him throughout life. He went to son's Grammar School and London University, ng his clinical studies at Westminster Hospital, which he qualified M.B., B.S. Lond., in 1906. r a house appointment there he went on to the nty Asylum at Leek, and the Union Hospital at field, developing at these places a taste for clinical ology, which led to an appointment as pathologist he Royal Southern Hospital at Liverpool. In , however, he joined the staff of the (London) oratories of Pathology and Public Health, and he last eight years held the senior post of Director. he same time he was honorary pathologist to the Edward Memorial Hospital at Ealing. "Much he intense labour which Fletcher devoted to technical problems, will," writes one of his colleagues, "never be known to the world, but his co-workers gained immense help from him. Engrossed in the pursuit of clinical pathology, his sole preoccupation was concerned with its advancement, with perfecting its technique, and with simplifying the means of attaining this. Thorough master of all the present-day ramifications of pathology, he excelled especially as morbid histologist, his verdict on the interpretation of microscopic sections being rarely falsified by the subsequent events." Eight or nine years ago, in collaboration with Prof. Hugh MacLean, he published a little book which aimed at guiding the practitioner in his relations with the pathological laboratory and at solving the difficulties, so far as they can be solved, of a scheme in which pathologist and laboratory are not in close proximity to practitioner and patient. Dr. Fletcher married Ellen, a daughter of Mr. R. Strain, and sympathy is felt with his widow, left with the care of a son and a daughter.

EDGAR WILLIAM WILLETT, M.D. OXF., F.R.C.S. ENG.

WE regret to record the death of Dr. Edgar Willett on April 13th after a brief illness. He was born on April 5th, 1856, at Brighthelmstone, as it was then called, where his father, Mr. Henry Willett, a wealthy brewer, was a well-known figure for many years, and bequeathed to the town a valuable collection of ceramics and other exhibits, now housed in the museum adjoining the Brighton Pavilion. To his father Edgar Willett owed the early training in natural history, and the interest in various branches of art which remained for his life-time a valuable inheritance. He went to school at Wellington, and proceeded to New College, Oxford, as a commoner, whence he took a 1st class Natural Science degree in 1879, became M.B. in 1885, and M.D. in 1904, having been made a Fellow of the Royal College of Surgeons in 1888. His choice of medical school fell on St. Bartholomew's, where his cousin, Mr. Alfred Willett, had recently been appointed full surgeon. After serving as his house surgeon, Edgar Willett became assistant anæsthetist under Mr. J. Mills, and succeeded Mr. Richard Gill on his retirement. He specialised as an anæsthetist in London for many years, residing in Queen Anne-street, and was President of the Society of Anæsthetists in 1905–06. He was also assistant surgeon to the Metropolitan Hospital, and surgeon to the Belgrave Hospital for Children. Not a voluminous writer, he contributed various articles to the St. B.H. Reports, and to the Transactions of the Pathological Society.

Edgar Willett retired from practice about 1906, and lived at a charming house in Worth Park, Sussex, where he occupied himself in local affairs, and was on the county council of East Sussex. He retained a keen interest in prehistoric archæology, and contributed articles on Flint implements to the journals of the Sussex Archæological Society and the Anthropological Institute. He was one of the original recruits in the London Volunteer Medical Corps, and was commissioned as Captain. Retiring with this rank he served again during the war chiefly at a hospital in Croydon, and was retired as Major, R.A.M.C., after the Armistice. In 1923 he bought a house at Hartfield, which he filled with treasures of furniture, pictures, and pottery, largely inherited from his father's extensive collections.

The friend and contemporary, to whom we owe most of these biographical details, remarks that Willett always maintained touch with his old hospital, and had a wide circle of old Bart.'s friends. Until the last few years his house was a centre of warm hospitality, but for some years his powers had been on the wane, and an increasing deafness impaired the great social qualities which had distinguished him. Never athletic or good at any game, he remained a good shot to his old age, and though he never hunted he was constantly to be found on foot at meets and covert sides. He was unmarried.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a recent examination the following candidates were approved :—

DIPLOMAS IN PUBLIC HEALTH, HYGIENE, AND TROPICAL MEDICINE AND HYGIENE.

Part I.—Baharsing Jagatsing Ajwani, Manmohan Singh Batra, *Colin Fraser Brockington, Bertha Margaret Butters, Ryder Carrel Dracup, Ishac Kirolos Gayid, Margaret Ann Glass, Nityaranjan Gupta, *Girgis Abdel Messih, Jean Hall Morton, Robert Arthur Welsford Procter, Effie Scott Stephen, Jagan Nath Vasudeva, Donella Anna Ferguson Watson, Dorothy Watterson, Percival Clarence Wickremesinghe, and *Koh Cheang Yeo.

* Distinguished.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council held on April 12th, Sir Berkeley Moynihan, the President, in the chair, the John Hunter Medal in bronze with the Triennial Prize of £50 was awarded to Mr. Victor Ewings Negus, M.S., F.R.C.S., for his investigations into the comparative anatomy and physiology of the larynx and the anatomy of the bronchi in their relation to surgery.—Mr. Charles Thurstan Holland, Ch.M. Liverp., and Sir Matthew Henry Gregson Fell, K.C.B., C.M.G., Director-General of the Army Medical Service, as Members of the College of 20 years' standing, were elected to the Fellowship.

No award of the Jacksonian Prize for the year 1927 was made. The subject of the essay for the Jacksonian Prize for 1929 will be the Pathology, Diagnosis, and Surgical Treatment of Diseases of the Salivary Glands.

A letter was read from the Canadian Medical Association approving the revised scheme for conducting Primary Fellowship Examinations in Canada, and conveying the thanks of the Executive Committee of that Association for the very efficient and generous provisions made. An account of the scheme will be found on p. 831.

Diplomas of Member were conferred upon the following who have passed the requisite examinations and have now complied with the by-laws of the College, viz. : A. D. W. Cooke, M.B., B.S. Durh., Durham and St. Mary's ; S. McGladdery, St. Bart.'s ; H. H. Mahmood, M.B., B.S. Punjab, Punjab and Middlesex ; J. W. Notley, Birmingham ; and Joan M. Oldaker, Royal Free.

The Hallett Prize at the Primary Fellowship.—The Council, being desirous of showing their appreciation of the services of Sir Frederic Hallett in connexion with the examinations for the Fellowship and the Licence in Dental Surgery during the long period of 50 years, from 1877 to 1927, and Sir Frederic Hallett having expressed a wish that the personal gift which it was proposed to make to him should take the form of the endowment of a prize to bear his name, it has been agreed that stock be purchased by the treasurers of the College on behalf of Sir Frederic Hallett and that the interest from the fund so established be expended on a prize called the Hallett Prize, to be awarded under the following regulations : The Hallett Prize shall be open to candidates admitted for the first time to the Primary Examination in Anatomy and Physiology for the Fellowship conducted by the board of examiners in this country. The Prize at each examination shall consist of a sum of 5 guineas with a certificate of the award of the Prize. The Prize shall be awarded to the eligible candidate, if any, obtaining the highest marks, who shall have reached a standard considered by the examiners sufficiently high to justify the award of the Prize. If two or more candidates are found to have reached the required standard and to have been allotted the same number of marks, being the highest obtained by any eligible candidate, it shall be open to the examiners to take such steps as they may think desirable to enable them to adjudicate in the matter.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.—A course of lectures on Pathological Research in its Relation to Medicine will be held in the bacteriological department of this institute at 5 P.M. on Thursdays, from April 26th to June 14th inclusive. The first lecture, on the Bactericidal Power of the Blood, and the Appraisement of the Value of Therapeutic Agents, will be given by Sir Almroth Wright, F.R.S., principal of the institute, on April 26th. The other lecturers will be Prof. D. W. Carmalt-Jones (Iodine in Relation to Goitre), Prof. E. C. Dodds (the Ovarian Hormone), Prof. Hamilton Hartridge, F.R.S. (Poisoning by Coal Gas and Products of Combustion), Prof. R. H. A. Plimmer (Some Recent Researches on Vitamins), Dr. G. V. Anrep, F.R.S. (Pathology of Conditioned Reflexes), Sir Oliver Lodge (The Uses we make of the Ether of Space), and Dr. Paul Fildes (Principles of the Treatment of Tetanus with Antitoxin). The lectures will be open without fee to all members of the medical profession and to students n medical schools.

AUXILIARY R.A.M.C. FUNDS.—The annual mee of the members of the Auxiliary Royal Army Medical C Funds will be held on Friday, April 27th, at 2.30 P.M 11, Chandos-street, Cavendish-square, London, W. 1.

BRITISH ORTHOPÆDIC ASSOCIATION.—The Sp meeting of this association will be held in Paris on Fr and Saturday, April 27th and 28th.

ROYAL SANITARY INSTITUTE.—A sessional mee will be held on Friday and Saturday, April 27th and in the Guildhall, Worcester. Subjects of discussion include river pollution, infant mortality, and activ sludge. On Saturday, May 5th, at 10 P.M., at the Guild Preston, a discussion on the present position of the w supply will be opened by Prof. F. E. Wynne, Dr. R. V Clark taking the chair. In the afternoon visits wi paid to places of interest. Those proposing to attend sh notify Dr. F. A. Sharpe, Health Office, Tithebarn-st Preston, not later than April 27th.

UNIVERSITY OF LONDON: *University College.* course of three lectures on the Pharmacological Evid for Modern Methods of Treatment will be given by Dr. Burn at University College, Gower-street, W.C., on Tues Wednesday, and Thursday, May 1st, 2nd, and 3rd, at 5 Admission free without ticket.

UNIVERSITY OF BIRMINGHAM.—A course of William Withering Memorial Lectures on Industrial Mal and Factory Hygiene will be delivered by Sir Th Legge at the Medical School Buildings, Edmund-stree 4 P.M. on Wednesdays from April 25th to June inclusive. Admission cards will be supplied on applic to the acting Dean, Prof. J. C. Brash.

INDIAN MEDICAL SERVICE.—The annual di of the I.M.S. will be held at the Trocadero Restau London, on Wednesday, June 20th, at 7.15 P.M., M General Sir Richard Havelock Charles in the chair. Fu particulars may be had from the joint hon. secre Major Sir Thomas Carey Evans, M.C., at 31, Wim street, London, W. 1.

BRITISH EMPIRE CANCER CAMPAIGN.—Sir J Bland-Sutton (Vice-Chairman) presided at the quar meeting of the Grand Council of the British Empire C Campaign held on April 17th. On the recommendati the Scientific Advisory Committee the Grand Co approved the following grants : £200 for one yea Dr. Louis Cassidy, to be applied through the new Nat Cancer Campaign (Ireland) ; £300 for one yea Mr. Harold Burrows, working at the Cancer Hospital (F £300 to Mr. C. F. W. Illingworth for one year for wo be carried out at Edinburgh University ; and £1000 fo ensuing year for work to be carried out under the s vision of Mr. F. C. Pybus, at Newcastle-on-Tyne. O recommendation of the Executive Committee the G Council also granted a sum of £400 to St. Mark's Hos City-road, and £100 to the Medical Society of Lo towards expenses incurred in the preparation and pu tion of statistical investigations recently carried ou that Society. The Grand Council received reports the various committees in charge of the preparation the International Conference on Cancer, to be held d July. Already 40 acceptances have been received foreign representatives in all parts of the world, and 100 delegates have been nominated by the leading u sities, medical schools, and scientific and medical soc of the British Isles and the British Dominions overse

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REASSEMBLY OF THE HOUSE OF COMMONS.

THE House of Commons reassembled after the E recess on Tuesday, April 17th. The House of reassembled on Thursday, April 19th.

THIRD PARTY INDEMNITY INSURANCE BILL.

In the House of Commons on Tuesday, April 17th ATKINSON asked leave to introduce a Bill to provid the direct discharge of third party liability by insurers. explained that the object of the measure was to ma the duty of an insurance company in so far as they liable for third party claims to pay those claims dir the injured person. It did not entitle the claimant to proceedings direct against the insurance company fo purpose of establishing liability or the amount of lia but once that liability was admitted, or established by proceedings, the insurers were then to hold the mon trust for the injured person and were under no oblig to pay the money over direct.

Leave to introduce the Bill was granted without a di and the Bill was read a first time.

THE PETROLEUM AMENDMENT BILL.

The Petroleum (Amendment) Bill was considered on port on April 17th.

On Clause 4 (which makes regulations as to classes of roleum likely to be dangerous or injurious to health).

Mr. HARDIE moved an amendment giving the Home retary power to prohibit the sale or use of petroleum rit which he might, by Order, declare to be so dangerous injurious to health that precautions for the protection persons employed or engaged in handling or using such roleum spirit were impracticable. He said that the endment referred to lead tetraethyl in petrol.—Sir W. YNSON-HICKS (Home Secretary) said that he would ept the amendment. Lead tetraethyl in petrol was now subject of an inquiry, and if the Home Secretary should, a result, declare that this particular spirit was injurious health, the amendment would be useful.

The amendment was agreed to.

The report stage was completed and the Bill was read hird time.

HOUSE OF COMMONS.

TUESDAY, APRIL 17TH.

Dysentery in Sinarango Prison Camp.

Mr. DAY asked the Secretary of State for the Colonies number of prisoners who were affected by dysentery he Sinarango prison camp, Malaita, while awaiting trial the murders that occurred last October; and the number deaths which occurred.—Mr. AMERY replied: 71 cases lysentery have occurred among the prisoners and there e been eight deaths. Seven cases were still under atment on April 2nd.

Voluntary Venereal Disease Clinics in Scotland.

Mr. BUCHANAN asked the Secretary of State for Scotland number of towns in Scotland of a population of 10,000 over which had no voluntary clinics for dealing with the blem of venereal disease; if he could give the names of se towns; and if he was at present taking any steps to e those local authorities to set up clinics.—Sir JOHN MOUR replied: The number of towns in Scotland with ensus population of 10,000 or over, and without a public ic for dealing with venereal diseases is 26, of which seven e a population of 20,000. These burghs, in order of ulation, are: Clydebank, Falkirk, Airdrie, Rutherglen, mbarton, Port Glasgow, Inverness, Musselburgh, Hawick, khaven, Methil and Innerleven, Rothesay, Dunoon, denbeath, Renfrew, Saltcoats, Peterhead, Galashiels, nstone, Alloa, Kirkintilloch, Barrhead, Montrose, Loch-y, Fraserburgh, Bo'ness, and Gourock. In three of se burghs—Falkirk, Inverness, and Rutherglen—pro-on of a venereal disease clinic is in course of being made, under active consideration. Four of these burghs—drie, Port Glasgow, Musselburgh, and Gourock—are so veniently situated for the clinics of adjacent larger towns not to require independent provision. The remaining burghs are served to a greater or a less extent by the rest available clinics of other towns. In 11 of these ghs the Scottish Board of Health have not thought the stion of providing a local clinic to be sufficiently urgent call for pressure by them upon the Local authorities, ing regard to the facilities available in neighbouring ns. In the case of the remaining eight burghs—lebank, Dumbarton, Hawick and Galashiels, Peterhead Fraserburgh, Saltcoats and Kirkintilloch, the question stablishing a burgh clinic or a joint clinic has been sidered by the responsible local authority, and remains n. The development of the schemes in all areas is being fully watched and reviewed by the Board.

Medical Diary.

SOCIETIES.

AL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, April 23rd.—8 P.M., ODONTOLOGY. Paper: Dr. Alexander Livingston: Further Experiments on the Permeability of Enamel. Casual Communications: Mr. W. Rushton: Injection of Alcohol for Neuralgia and its Sequel. Mr. Lewin Payne: A Paste for Obtunding Hypersensitive Dentine.

TUESDAY.—5 P.M., MEDICINE. Paper: Prof. Snapper (Amsterdam): The Rôle of the Kidney in Non-renal Disorders. Demonstration: Dr. A. F. Hurst and Dr. P. J. Briggs: Radiological Demonstration Illustrating Unusual Alimentary Disorders.

THURSDAY.—8.30 P.M., UROLOGY. Clinico-pathological Evening.

FRIDAY.—4.30 P.M., DISEASE IN CHILDREN (at the London Hospital, E.). Tea will be served at 4.30 P.M. Cases will be shown.—8 P.M., EPIDEMIOLOGY. Paper: Dr. Allan C. Parsons: Post-encephalitis and its Problems.—8.30 P.M., ELECTRO-THERAPEUTICS. Short Papers: Dr. R. W. A. Salmond: Observations on the Movements of the Duodenal Contents, with Special Reference to Antiperistalsis and Pyloric Regurgitation. Dr. Bathurst: Treatment of the Incontinence in Women.

ROYAL SOCIETY OF ARTS, John-street, Adelphi.

WEDNESDAY, April 25th.—8 P.M., Mr. J. M. Ritchie, Ph.D.: The Education and Training of the Blind.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, April 25th.—3.30 P.M., Dr. J. B. Alexander: Early Signs and Symptoms of Rheumatic Infections.

MEDICO-LEGAL SOCIETY, 11, Chandos-street, W.

THURSDAY, April 26th.—8.30 P.M., Dr. John Glaister, Jun., Barrister-at-law: Hair: Considered Medico-Legally.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, April 27th.—8.30 P.M., a Paper will be read by Dr. Archibald Leitch on Syphilis in Relation to the Ætiology and Diagnosis of Malignant Disease.

ILLUMINATING ENGINEERING SOCIETY.

TUESDAY, April 24th.—6 P.M. (in the Home Office Industrial Museum, Horseferry-road, Westminster, S.W.), Inspection of Lighting Exhibits. 6.30 P.M., Discussion on Artificial Light, to be opened by Mr. J. S. Dow.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY, Paddington, W.

THURSDAY, April 26th.—5 P.M., Sir Almroth Wright, F.R.S.: The Bactericidal Power of the Blood and the Appraisement of the Value of Therapeutic Agents.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, April 23rd.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Tuesday and Friday, at 2.30 P.M., there will also be demonstrations of Throat, Nose and Ear and Medical Cases (Children) by Mr. W. Ibbotson and Dr. C. E. Sundell respectively.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, April 23rd, to SATURDAY, April 28th.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Tues., 10 A.M., Ward Round by Dr. V. S. Hodson. 2 P.M., O.P. Demonstration. The practice of the hospital is open for the day, and the above clinics are free to medical practitioners.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road. Special Course, afternoons only (second week).—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., 5.15 P.M., Dr. Heald: Lecture-demonstration.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Special Course in Medicine, Surgery, and Gynæcology.—LONDON SCHOOL OF TROPICAL MEDICINE, Endsleigh-gardens, W.C. Tues., 2 P.M., Lecture-demonstration by Dr. Carmichael Low. Thurs., 2 P.M., Lecture-demonstration by Dr. Manson-Bahr. Further particulars from the Secretary, Mayfair 2236.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, April 27th.—4 P.M., Dr. Dan McKenzie: Dental Cysts.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.

TUESDAY, April 24th.—4.15 P.M., Mr. A. H. Burgess: Renal Tuberculosis.

FRIDAY.—4.15 P.M., Mr. G. Jefferson: Demonstration of Neurological Cases.

Appointments.

ALLAN, J., M.D., B.Ch. Edin., D.P.H., has been appointed Ophthalmic Surgeon at the Downham (L.C.C.) Treatment Centre.

AMYOT, T. E., M.B., B.S. Durh., a Medical Referee under the Workmen's Compensation Act for Chester, and Holywell, Flint, and Mould Circuits.

BAIRD, J. E., M.B., Ch.B. Belf., Medical Officer to the Holt Line.

LAMONT, D. C., M.B., Ch.B. Edin., D.P.H., Medical Officer of Health, City of Lincoln.

MARTYN, F. D., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Sutton in Ashfield.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital, Vauxhall Bridge-road, S.W.—Temp. Non.-Res. H.S. At rate of £150.

Alton, Hants, Lord Mayor Treloar Cripples' Hospital and College. Second Asst. Res. M.O. £300.

Basingstoke, Hants, Park Prewett Mental Hospital.—Second Asst. M.O. £450.
Birmingham and Midland Ear and Throat Hospital.—Asst. Surg. O. £200.
Birmingham City Infectious Diseases Hospitals, Little Bromwich.—3rd Asst. M.O. £350.
Bournemouth, Royal National Sanatorium for Consumption, &c.—Laryngologist.
Bristol General Hospital.—Pathologist and Curator of the Museum. £500.
Bristol Royal Infirmary.—Hon. Surg. in charge of Ear, Nose and Throat Dept.
British Social Hygiene Council, Carteret House, Westminster, S.W. Lecturer on V.D. &c.
Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.
Central London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—2nd Res. H.S. At rate of £75.
Chelmsford, Administrative County of Essex.—Two Asst. County M.O.H.'s. Each £600.
City of London Hospital for Diseases of Heart and Lungs, Victoria Park, E.—M.O. At rate of £100.
East London Hospital for Children and Dispensary for Women, Shadwell, E.—H.S. and Whole-time Cas. O. Each at rate of £125.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Farringdon General Dispensary, Holborn-circus, E.C.—Hon. Phys.
Fiji Government.—Dist. M.O. £500.
Glasgow Royal Infirmary.—Deputy Med. Supt. and Sen. Med. Resident. £200.
Gloucestershire Royal Infirmary.—Asst. H.S. At rate of £120.
Golden-square Throat, Nose and Ear Hospital, W.—Hon. Consulting Ophth. S. Also H.S. £100.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.
London Hospital, E.—First Asst. and Reg. to one of the five Surg. Firms. £300.
Newcastle-upon-Tyne, Education Committee.—Asst. Sch. M.O.
Rotherham Hospital.—H.P. £180.
Royal Eye Hospital, St. George's-circus, Southwark, S.E.—Res. H.S. and Asst. H.S.
St. John's Hospital for Diseases of Skin, Leicester-square, W.C.—Hon. Asst. Phys.
St. Mary's Hospital, W.—Surg. in charge of Out-patients.
St. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—3rd Anæsthetist. At rate of £25.
Samaritan Free Hospital for Women, Marylebone-road, N.W.—Registrar. £100.
Stoke-on-Trent, City Education Committee.—Asst. Sch. M.O. £500.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Anæsthetist, Hon. Asst. Aural S. and Hon. Asst. Orthop. S. Also Asst. H.P. £125.
Walsall General Hospital.—Sen. H.S. At rate of £200.
York County Hospital.—H.S. £150.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Chaddesley Corbett (Worcestershire) and Crowborough (Sussex).

A vacancy is announced for a Medical Referee under the Workmen's Compensation Act for Bridgend County Court. Applications should reach the Home Office, Whitehall, S.W., not later than May 5th.

The Home Secretary gives notice that he is considering the appointment of a Medical Referee under the above Act for the district of the Bridgend County Court (Circuit No. 30). Applications for the post from duly qualified Medical Practitioners with surgical experience resident in, or in the neighbourhood of, Bridgend should be addressed to the Private Secretary, Home Office, Whitehall, London, S.W.1, and should reach him not later than May 5th, 1928.

Births, Marriages, and Deaths.

BIRTHS.

DE VILLIERS-PRITCHARD.—On April 17th, at 9, John-street, Mayfair, to Audrey, wife of Dr. C. W. de Villiers-Pritchard—a son.

MILLIGAN.—On April 15th, at Norfolk-square, W., the wife of Norman Milligan, M.B., of Royston, Herts, of a daughter.

MONTGOMERY.—On April 6th, at Foxhall, Osborne Park, Belfast, the wife of Dr. F. P. Montgomery, of a daughter.

MARRIAGES.

BARKER—JOHNSTON.—On Thursday, April 12th, at the Parish Church, Whitstable, Alan Barker, M.B., B.Chir., to Margery Lulu, elder daughter of Mr. J. R. J. Johnston, I.S.O., and Mrs. Johnston, Thatch House, Whitstable.

DEATHS.

PACKMAN.—On April 8th, at a nursing home, Alfred Charles Augustus Packman, M.D., J.P., for 41 years in practice at Rochester, aged 64.

SATCHWELL.—On April 8th, at North Curry, Somerset, Hubert John Satchwell, F.R.C.S.I., in his 60th year.

SHIACH.—On April 12th, suddenly, at Paris, Gordon Reid Shiach, L.D.S. (Edin.), of Rosebrae and Ardgilzean, Elgin, aged 61.

WILLETT.—On April 12th, at Spyways, Hartfield, Edgar William Willett, M.D., F.R.C.S., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstract

TREATMENT OF GUNSHOT WOUNDS

AND THE IMPROVEMENT THEREOF BY AMBROISE PA IN THE CAMPAIGN OF FRANCIS I. AGAINST CHARLES V. (1536–1544).*

BY THEODORE MEYER-STEINEG,
PROFESSOR OF THE HISTORY OF MEDICINE IN THE UNIVERSITY OF JENA.
(*Translation by* F. J. FRANKAU.)

THE discovery and introduction of firearms raised questions not only for generals but for everyone dire or indirectly connected with warfare, including the med man. The latter recognised very soon that the wou caused by the new weapons, whilst similar in several resp to the injuries caused by the arms hitherto in use, displa a number of special features. But, as not infreque happens with a new problem of this sort, the judgm on these special features went far beyond the mark. A fi opinion, based on many crass errors, was arrived at, though these errors ought to have been clearly obviou the eyes of an unprejudiced medical man, they brou under their spell such a large circle of otherwise not uncri minds that, even when regard is had to the condition those days, we are to-day faced with an enigma.

Perhaps the extraordinarily slow spread of the new in tion contributed to the obstinacy of these opinions. F took nearly 200 years from the Battle of Crécy (1346 which field guns were used for the first time in any quan until portable firearms were universally introduced armies. And so it was not until the end of the fifte century that the increased numbers of wound cases affo the surgeons proper opportunities to observe the new fe of wounds and to exchange views about them.

Earliest Methods of Treatment.

A German, Heinrich von Pfolspeundt, in his work (1 entitled "Bündth-Ertzney," was the first to treat of powder, balls, and the wounds caused by them. An the work of another German author, Hieronigmus Brunschwig (1497), entitled "The Book of Wound Medici the view is for the first time expressed that gunshot wou are "poisoned" by the gunpowder and should be tre accordingly. Having regard to the paucity of his orig remarks, it is to be assumed that Brunschwig is only reta the opinions he gathered from others. In any case i erroneous view was widespread about the turn of fifteenth century, even in countries where his work scarcely have been known. Yet alongside of this p partial opinion wider views of other surgeons are to found. The latter consider gunshot wounds as injurie three sorts: contusion, burning, and poisoning.[1] Fore amongst those adopting this point of view was the Ita Vigo [2] (about 1460 to 1517), who by his authority not influenced the theoretical views of his contemporaries, very likely also the practical procedures which surg followed as a result thereof. The treatment advisec him and, which he announces with pride, was based his own very comprehensive experiences, displays abov else an endeavour to free the "poisoned" wounds of po For this purpose they should in the first place be b with a red hot iron (candenti ferro decoquere), or Egyptian salva, prepared according to Avicenna's pres tion, should be applied (unguentum ægyptiacum descript Aviccennæ administrare), or instead of this the wo should be burnt with boiling oil of the Sambucus (ferv oleo sambucino cauterizare), "for the cauterisation pro the patient against putrefaction of the wounds, as it the poison of the gunpowder." Not for a single mo

* Ambroise Paré was born in 1510 at Bourg-Hersent, Laval (Dép. Mayenne). He trained first as a barber and as a surgeon at the Hotel Dieu. In 1536 he took pa Francis I.'s campaign under de Montejan, and four years was promoted "maître barbier." After participating in fu campaigns he became one of the "chirurgiens ordinaires Henry II. in 1552, and was admitted to the "Collège de Côme" as "maître en chirurgie." Then followed dis with the Faculty of Medicine of Paris, as they tried to pr the publication of his writings. On St. Bartholomew's (1572) he only escaped with his life through King Charles whose "premier chirurgien" he was, affording him his per protection. Henry III. named him as a "conseiller." died in 1590, having served as privy surgeon to four kin succession, highly respected, but to the last opposed, openly, at any rate in secret, by the medical faculty.

[1] Contusion: "ratione rotunditatis instrumenti," Bu "ratione igneitatis," and Poisoning "ratione pulveris."

[2] Giovanni da Vigo, Practica in arte chirurgica copiosa. Lib. III., Tract. II., Cap. III. De vulnere facto ub instrum quod bombard nuncupation.

d it occur to Vigo, or to the many others who acted cording to his advice, that this procedure involved a ich more dangerous and deep-seated burn in addition to e serious and direct injuries to the tissues caused by the ot itself. And this, notwithstanding the fact that according the universal report of almost all writers, the mortality wounded persons who had been treated in this was was traordinarily heavy. The conclusion come to was simply at the poisoning of the wounds by the gunpowder was so tent that, notwithstanding the application of the best nedies, it destroyed the body.

Through these opinions the far saner and less drastic ethods of treatment of other surgeons were entirely driven to the background. For instance, the above-mentioned er. Brunschwig had proposed pushing a "rope of hair" rough the wound channel, drawing it backwards and rwards and thereby extracting the poisonous powder m the wounds. Or, if the wound did not then commence suppurate, a strip of bacon having one end rubbed with fat should be introduced into the wound passage, "so it ll attract all poison to itself and no poison will remain the cavity, and it will make the cavity suppurate." For bsequent treatment salves and plasters of various sorts re recommended. A special question arose in those ses in which the missile still remained in the body. unschwig had recommended that after widening the annel of the shot the ball should be extracted with llet forceps or with an instrument named from its shape stork's beak." Gersdorff [2] used a much larger assortment instruments; a long bullet spoon, called "hock," a ring tool to screw into a deep-seated ball, a thick-toothed ir of tongs called "snake," or a straight pair of tongs th block ends (Klotzzange).

In the works of the many other surgeons who wrote on e treatment of gunshot wounds, we find but very few riations from this procedure. Through Vigo the opinion to the poisoning of wounds became the paramount one d the common belief of surgeons, so that the "freeing e injury of poison" and the methods prescribed by Vigo that behalf appeared to be the most important duty of e surgeon.

An Accidental Discovery.

Even Ambroise Paré, a usually very critical person, admits thout qualification that he at first accepted this early ew as to the poisoned nature of gunshot wounds and had llowed the treatment prescribed by Vigo, though not ite without scruples. It was only thanks to an accident at he realised the error of his opinions and the harmful ture of the practice following from them. He describes this ite modestly in his work: "La méthode de braicher les ayess faïctes par hacquebutes et aultres bastons à feu: de celles qui sont faictes par fléches, dardz, et semblables: ssy des combustions spécialement faictes par la pouldre à non." Paris, 1545.

"In the year of our Lord 1536 Francis, King of France, who his distinguished actions and deeds in War and Peace was named 'the Great,' sent a powerful army over the Alps . . . rtly to provide Turin with provisions, troops, and other cessaries and partly to recover the towns of this province ich had been captured by the Count Guasto [Vasto] in mmand of Imperial troops. I found myself then with the yal Army as Surgeon attached to the infantry under the preme command of Montejan. The Imperialists had seized e Pass of Susa, the Camp of Villa, and had occupied all other proaches, so that it was only by great force that they could driven out of those positions and the Royal Army had to en the way for itself with the sword. In this concourse and such a conflict of armed men there were a large number unded by shot of both sorts,[4] but specially those caused by illery. I must, however, admit that at that time I had not rdened my spirit too much with the knowledge of surgery d especially was not yet very learned in the treatment of uries caused by artillery. I had, it is true, read in Joh. gonius that wounds caused by firearms were poisoned by ason of the gunpowder. One must, therefore, in order to heal em burn them with boiling oil of elder (Sambucus) mixed with mall quantity of Theriak.[5] As, however, I had not too much th either in the author or his remedy, and as I certainly was are that it was impossible to use burning expedients in relation wounds without causing the most fearful pains and worries, lesired before taking the risk myself to observe and to satisfy rself by my own eyes whether the other surgeons who were in e same camp with me made use of any other treatment of unds. I perceived, however, that they all observed the ethods prescribed by Vigonius and endeavoured as soon as ssible to introduce boiling oil into the wounds by means of a nt. This encouraged me to attempt the same with those ses which were entrusted to me. It so happened, however, at by reason of the great numbers of wounded who came in at my supply of that oil ran out. As there were still several ses calling for treatment I saw that, if I was not to pear to have done nothing and to be leaving them in e lurch without any treatment, I must lay on a so-called igestive remedy' consisting of yolk of egg, oil of roses, and rpentine. Having done so I passed a sleepless night, for I was depressed and worried about the treatment of the previous day, as I thought it was of no avail. I feared that when on the following day I came to remove the bandages I should find the wounded men either dead or dying in consequence of the poisoned wounds, as I had not cauterised them with the boiling oil. Therefore, I rose very early, visited the sick and observed, quite contrary to my expectation, that those whom I had treated with the digestivum had passed the whole night without serious pain and that neither inflammation or swelling manifested themselves in their wounds; on the other hand, that those I had treated with the boiling oil were in a fever with terrible sufferings and swellings round the wounds. Having subsequently several times had the same experience with many other cases, I came to the resolution never again to treat cases of gunshot wounds with boiling oil."

Little can be added to these words. They demonstrate clearly that Paré, fully recognising the uselessness, indeed the folly of the treatment of gunshot wounds then in vogue, had gone over to, or more accurately speaking had returned, as we should say to-day, to a more conservative treatment. For his expedients coincide in principle and in many details with those which in ancient medicine were adopted by Hippocrates and the medical men who followed him. With respect to the most important principles Paré clearly says, "que pour bien estraire les balles demeurées dedans quelque partie du corps, il falloit situer le blessé en telle situation, qu'il estoit, lorsqu'il fut frappé." Moreover, cases are to be treated by the use in the first instance of cleansing methods, but not the oil (les médicamenter au usant de suppuratifs au commencement, et non d'huile bouillante).[6] Furthermore, he says in support of his view, that gunpowder cannot possibly be poisonous; for in the first place its constituent parts were not of that nature; moreover, that soldiers frequently used it internally as a sort of antidote and went so far as to rub it into sores in order to dry them up. Another widely accepted opinion he also shows to be erroneous—namely, that the balls become so heated from being fired that they burn the wounds which they cause. He says that this is absolutely untrue, "car une balle estant tirée contre une muraille, on la pouvoit promptement teniz en main nue, combien que pour la collision faite contre la pierre, elle devroit encore estre plus echauffée."

Removal of the Missile.

In detail Paré gives the following directions [7] for treatment. After a short introduction on the varying sorts of gunshot wounds according to parts hit and injured as well as the symptoms produced, he gives advice as to first treatment (premier appareil). The wound, if the position of the body permits, is to be enlarged by an instrument, in order to remove dirt or foreign bodies which may have got into it. In order to ascertain the position of the missile the wounded man, as already mentioned, should be placed in the same position as that in which he was when he was hit, "pourceque les muscles et autres parties autrement situées peuvent estomper et empêcher la voye." Then an attempt is to be made to remove the missile with the finger. If this is unsuccessful, by reason of its being too deep-seated or for any other cause, a long probe with a thickened but rounded end is to be used.

The list of instruments for the extraction of balls is fairly long and very cleverly adapted to varieties of projectiles and the wounds caused by them respectively. As regards the former he mentions, amongst guns: bom cardes, canons, doubles-canons, bastards, mosquets, passe-volans, piéces de campagne, couleuvrines, serpentines, basilisques, faucons, fleutes and many others; amongst hand firearms: pistoles, pistolets, petits bidets, petits lezards et scorpions, harquebuses à croc, mousquets and many others. In addition quite a number of explosive bodies which are not projected from a firearm are mentioned, such as mines, sapes, pots à feu, and grenades, &c.

That these very various missiles, which both in their form and effect produced wounds very different from the earlier weapons which Paré himself designates as children's toys, required not a few tools to deal with them is obvious, and we find quite a number of such: toothed tongs in the shape of crows' beaks (bec de corbin dentelé), the lizard's snout (bec de lézard) and many another toothed implement. The "ball extractor" (tirefond) which had a sharp boring tool that turned within a long straight tube served the special purpose of screwing into leaden bullets which were set fast in the depth of the wound and so to extract them. For the widening of the passage of the missile, as well as knives, there were special "dilatatoires," consisting of several arms which could be spread out, like the "specula" used already in ancient days.

Cleansing the Wound.

The general condition of the patient was not lost sight of after the missile had been extracted, and directions as to diet and bleeding were given. If the wound is dirty and

[2] Hans von Gersdorff: "Feldbuch der Wundartzeney," 1517.
[4] Semble: artillery fire and muskets.
[5] A medicament of ancient medicine, compounded of innumerable different things.
[6] Apologie et traité contenant les voyages faits en divers lieux.
[7] Malgaigne: Œuvres complètes d'Ambroise Paré. Paris, 1575. Livre IX., Cap. I. Conf., also Gurlt, Geschichte der Chirurgie, vol. ii., p. 734.

shows no sign of cleansing itself (pourriture) he seeks to bring it about by methods similar to those of the surgeons before his time. In these puppy oil (oleum catellorum) plays a great part. It was made by boiling quite young puppies in oil till they were entirely dissolved, with the addition of earthworms, turpentine, and spirits of wine, and was intended mainly to bring about a mild suppuration. If, however, there are signs of decomposition at the start he combats them by remedial measures (remèdes contrariants à la putrefaction). The chief remedy for this purpose is "Egyptiac" consisting of alum, verdigris, and Roman vitriol boiled into a thick syrup with honey and vinegar. This was introduced into wounds by probes or tents or injected by means of a long syringe. Later on Paré used in place of these instruments metal drainage tubes made of gold, silver, or lead (pourtant j'approuve d'avantage les tentes cannulées, faits d'or, d'argent ou de plomb). Compresses with holes made in them are then laid over the wounds, so as to allow of excretion from the wound to run away; these in their turn are covered with an absorbent sponge, and the whole fixed by bandages. The dressing must be renewed every 24 hours until the wound begins to suppurate, and after that every 12 hours, and in the case of severe suppuration at still shorter periods. When the wound has cleansed itself, mollifying and soothing remedies were used for the after-treatment.

Amputations.

There is no doubt that Paré by these improvements in the treatment of wounds did a great service; not only were innumerable wounded men saved from incurable sickness and from death, but his methods also led to the reform of other branches of surgery, a large number of hitherto faulty methods being perfected. For the military surgeons the chief questions for consideration were his improvements as regards amputation and styptics as well as his directions regarding substitutes for lost limbs (prosthesis) and orthopædic apparatus. With the words, "L'art commande que l'on commence à la partie saine," [8] that is to say, that in cases of amputation a surgeon must always work in sound tissues, and not in the diseased parts, but above them, he sets up an axiom at variance with that of the ancients which to us nowadays is self-understood, but at that time involved a great advance. He very properly, however, limits his laws by directing that the surgeon must always seek to preserve as much as possible of what has remained sound. Paré also considerably improved the methods of carrying out an amputation. The problem of restraining hæmorrhage, which from earliest times was a difficult one, was in his day universally solved by cauterising with a red-hot iron the blood-vessels which were severed in the course of amputating a limb. Even whilst the desired result was achieved in most cases, the severe burning of the tissues produced conditions which were not exactly conducive to a rapid and even healing of the wound, and in which several dangers lay hidden. "Il faut promptement lier les grosses veines et artères si ferme qu'elles ne fluent plus," says Paré,[9] thereby reintroducing the method practised by the ancients, but long entirely forgotten, of tying the arteries. Even if his technique seems still very rough, yet it fulfilled its purpose to such a degree that at one fell swoop it did away with a great part of the dangers of an amputation. And, reviewing the matter, he speaks of the immediately preceding method as "chose très horrible et cruelle seulement à raconter: car cela causait une extrême douleur aux patiens," and, moreover, scarcely one-third of the number so treated escaped with their lives.[10]

Artificial Limbs and Appliances.

Paré dedicates a whole book [11] to the substitutes for lost limbs (moyens et artifices d'adjouster ce qui défaut naturallement ou par accident). Whilst as regards the treatment of plastic operations, that is to say, substitution by living parts, he displays no advance upon his predecessors, but on the contrary on many points, such as his description of plastic treatment of the nose, he is in error, yet he shows himself fully equal to many other tasks. For instance, as regards defects of the palate, arising from shot wounds or other violence, and which may affect the powers of speech seriously, he suggests contrivances which he designates as "obturateurs du palais." They are cleverly affixed to the palate and so entirely cover the orifice that a normal function is again restored.[12] So, too, for ears that have been cut off and for other parts he provides an artificial substitute.[13] Difficult problems such as compensating the loss of power to move a thumb, the extensor muscles of which have been severed, he solves by the application of an appropriate artificial part to the wrist which replaces the power to move the thumb, so that the limb can again be used to hold a sword.[14] By the coöperation of a clever locksmith and mechanic he also was enabled to give descriptions and drawings in his works [15] of artificial hands, arms, and legs, which enabled any capable workman to produce artificial parts in accordance therewith. Thus, he constructed an artificial hand which, by a very ingenious but somewhat complicated mechanism, afforded a certain amount of movement actuated by the muscles of the arm on which it was fixed in a peculiar manner. The same applies in greater degree to an artificial arm which he invented. One of these was probably worn amongst others, by a Huguenot captain who had lost his arm by a gunshot wound at the Siege of Fontenoy. The apparatus is alleged to have worked so well that he was enabled thereby again to handle the reins.[16]

With all the above we have by no means exhausted Paré's services in the field of surgery. Rather does one see his improving hand in many details of the treatment of wounds in the days that came after him. And wherever his activity becomes apparent Paré proves himself not only a surgeon in the narrower sense of the word, that is to say, a man who looks upon his profession as manual labour, but as a true doctor; who, in act and deed, follows the maxims which he himself has set forth in verse in his "Canons et règles," [17] and of which one reads:

Science sans experience
N'apporte pas grande assurance.

[8] Œuvres Complètes, Livre X., Cap. 20.
[9] Œuvres Complètes, Livre X., Cap. 22.
[10] L.c., Cap. 25. [11] L.c., Livre XVII.
[12] L.c., Cap. 4. [13] L.c., Cap. 6.
[14] L.c., Cap. 10. [15] L.c., Cap. 12.
[16] Pantheon litteraire, chroniques du XVI. siècle, quoted by Gurlt, Geschichte der Chirurgie II., p. 775, note.
[17] Œuvres Complètes, III., p. 647.

A SYMPATHETIC PSYCHONEUROSIS.

To the Editor of THE LANCET.

SIR,—It may interest your lay correspondent that Mrs. Leather, in her "Folk-Lore of Herefordshire," states that in that county it is quite generally believed that the father frequently suffers as much or more than the mother of his first baby, and sometimes, but more rarely, at the time of subsequent births. The pain may even be transferred to the husband altogether and any tooth, or other ache, affecting the husband at this time is ascribed to the same cause. Mrs. Leather (p. 111) gives three examples. She also reproduces the explanation of an old woman at Garway: "I allus thought as the Almighty appinted that very wi, so the poor woman 'ad ha' more strength when the time came." Mrs. Leather suggests that the superstition is the last trace of the *couvade* custom.

I am, Sir, yours faithfully,
MACLEOD YEARSLEY
Wimpole-street, W., April 16th, 1928.

CENTENARY OF THE INVENTION OF COCOA.

A HUNDRED years ago, in April, 1828, a Dutch chocolate manufacturer, Coenraad Johannes van Houten, discovered a process whereby cocoa-powder as it is known to-day could be made. The cocoa-bean had already been introduced into Europe from Mexico by General Cortes 200 years before this, but until van Houten made his discovery, the cocoa and chocolate industry had remained an insignificant affair, and the housewife who wished to make the beverage was reduced to boiling rock chocolate for a lengthy period. During the whole of this week celebrations are being held in the little Dutch town of Weesp, near Amsterdam, by the members of the family of the inventor, who still control the business, to commemorate the centenary of the beverage they manufacture.

THE DOCTOR'S EMERGENCY REMINDER.

WE have received from Messrs. J. C. Eno, Ltd., a tastefully leather-bound little book of a size to fit the waistcoat pocket which contains useful notes on the stocking of an emergency bag, and hints on dealing with poison cases, hæmorrhage, shock, anæsthetic emergencies, and drowning. The commoner poisons are arranged alphabetically with a summary of symptoms and treatment. Members of the medical profession can obtain the book free on application to the Messrs. J. C. Eno, Ltd., Lever House, Victoria Embankment, London, E.C.

THE Crookes Laboratories, London (British Collosol, Limited), are now represented in America by their associated house—British Colloids Company, 145, East 57th-street, New York—from which Collosol products can be obtained direct.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—The annual conversazione of this Society will be held at the Kensington Town Hall, on Friday, June 15th, at 8 P.M. At 8.30 the Cavendish Lecture will be given by Dr. A. Rollier, of Leysin. His subject will be The Therapeutic, Preventive, and Social Value of Heliotherapy in Surgical Tuberculosis.

An Address

ON

RADIUM IN THE TREATMENT OF MALIGNANT DISEASE.

Delivered for the British Empire Cancer Campaign and Yorkshire Post-Graduate Association at Leeds on April 4th

By G. E. GASK, C.M.G., D.S.O., F.R.C.S. Eng.,
SURGEON AND DIRECTOR OF THE SURGICAL UNIT, ST. BARTHOLOMEW'S HOSPITAL; PROFESSOR OF SURGERY IN THE UNIVERSITY OF LONDON.

Although radium has been known for 30 years, and employed as a remedial measure in all sorts of disease, the results have, on the whole, been disappointing. Hope has been kept alive by occasional inexplicable cures, but these have been so few that practitioners have been led to believe that radium was not a therapeutic measure with which they need trouble themselves much, and that as regards malignant disease it was to be kept for use in those instances of inoperable growths for which nothing else was available. Events which have taken place during the last few years are, however, altering our conception of the value of radium and making it desirable that clinicians should reconsider their opinion, carefully examine present knowledge, and keep a watchful eye on future developments. The reason for this change of attitude is the result of recent work and development in the technique of handling radium and of applying it to the treatment of malignant disease. It can now be stated that it has been proved indubitably that in a considerable number of cases undoubted malignant tumours have been observed to disappear after exposure to the rays of radium.

The object of this address is to give a brief statement of the present position of the use of radium in malignant disease and to set out, as fairly and honestly as possible, the judgment of a surgeon who has had the opportunity of observing and assessing the value of some of the recent work done.

Summary of the Physical Properties of Radium.

In 1895 Wilhelm von Röntgen discovered the rays which are now known as the Rontgen or X rays. Other radio-active substances were discovered shortly afterwards, and in 1898 Prof. and Mme. Curie isolated two radio-active bodies from pitchblende and called them radium and polonium. Radium is found in nature in small quantities in certain mineral deposits, of which the richest are in the Belgian Congo. It is a lengthy and costly process to extract the radium from these deposits, and to give some idea of the difficulty involved it has been stated that from one ton of ore only half a gramme of radium is obtained. This lengthy and intricate method of production is given as the reason for the very high price. One gramme of radium (a threepenny-piece weighs about a gramme) costs approximately £11,000 at the present time. Radium in its metallic state is a pure white metal, which changes quickly when exposed to air and reacts with water. Therefore for therapeutic measures it is always prepared and used in the form of salts, generally as radium bromide. The most important radio-active elements are uranium, radium, polonium, actinium, and thorium. Radium is by far the most important, because it disintegrates at a convenient rate, which allows the use of its radiation over a long period.

Radio-activity is defined as the spontaneous emission of certain atoms or rays. This emission is the outward evidence of the spontaneous disintegration of the radio-active substance, atom by atom, into other substances. One per cent. of a radium mass disintegrates in each 25 years. Therefore the radio-activity of a pure radium preparation continues for an average life of 2500 years. The final product of radium after disintegration is lead.

Each of the radio-active substances is formed from the one preceding it after an outburst of energy, evidenced by the emission of rays. The rays emitted by radium are of three varieties, known as alpha, beta, and gamma rays. The property of these rays is threefold: (1) they act on photographic plates; (2) they cause certain substances to fluoresce; (3) they have an ionising influence. It is with the ionising rays that we are most concerned in the treatment of malignant disease, because they have a distinct effect on living tissue.

Effect of Irradiation on Animal and Vegetable Tissues.

A very large number of experiments have been carried out in order to ascertain the effect of the action of radium on living tissue, both animal and vegetable. The results of these experiments, which have been detailed at length by Colwell and Russ, may be summarised briefly by saying that in certain doses animal life is adversely affected. Destruction of tissue occurs, the growth of embryos is checked or altered, and prolonged irradiation may cause death. The effect on vegetable life is similar; growth is interfered with, and alteration occurs in structure. Experiments on bacteria indicate that the rays of radium are capable of arresting and, if sufficiently intense, of stopping the growth of cultures. The bactericidal power of radium is sufficient to kill cultures of organisms such as *Bacillus coli communis*, *Staphylococcus aureus*, and *Bacillus pyocyaneus* in a comparatively short time. The effect of the rays on living tissue appears to be a local one. It is evidenced by alterations of shape and activity of the nucleus, and when irradiation is sufficiently powerful or long-continued the cell dies. Some forms of tissue are more easily affected by irradiation than others, and tissues in active growth are more vulnerable than fully formed tissues. Cells of the ovary and testis are more easily killed than fully formed fibrous tissue cells. Tissues in which cell division is most active are the most vulnerable of all. It is well known that mitosis is very active in cancer cells, and thus it is possible to expose neoplasms to the rays of radium and to kill or injure these cells without killing the other cells of the body.

Radium as a Therapeutic Agent.

The use of radium as a therapeutic agent was discovered by accident. The French physicist, Becquerel, it is stated, put some tubes containing radium in his pocket and carried them about with him for some days. He found that the radium had burnt his skin. So he discovered that radium is capable of producing an inflammatory and, if continued long enough, a destructive effect on the normal skin—effects that are similar to the now well-known burns which may follow the incautious use of X rays. This phenomenon suggested to a man of fertile imagination—it has been stated that the man was Besnier—that the rays might be utilised to kill certain cells which are considered harmful to man. Then followed pioneer work by a number of people to whom reference cannot be made here. It was found quite early that radium had a beneficial effect on certain skin lesions, notably on rodent ulcer, and these ulcers were shown to disappear permanently after exposure to the rays. Gradually the use of radium was extended to the treatment of all sorts of diseases. Reports on these results were most confusing, and it was almost impossible for the ordinary man to assess their value. For the most part accurate details of the exact nature of the disease treated, the method of application, and the dosage were lacking. Clinicians therefore felt that its value as a remedial measure was too uncertain for them to recommend it to their patients, and its use fell into disrepute.

In view of these unsatisfactory and conflicting reports the Medical Research Council determined to institute an investigation which should be carried out

in a scientific manner on a large scale, so that reliable knowledge might be accumulated and distributed. At the close of the war a stock of radium bromide which had been collected in this country for military purposes was entrusted by His Majesty's Government for a period of years to the Medical Research Council. This stock was distributed among a number of research centres with a view to an extended and coördinated inquiry into the medical uses of radium, with especial reference to its application in the treatment of malignant disease. Subsequently further supplies of radium were provided by the British Empire Cancer Campaign, with the object of increasing the scope of the work, and an arrangement was made by which the Radiology Committee originally appointed by the Medical Research Council should also serve the radiological interests of the Campaign. The wisdom and foresight of those who initiated this research are amply justified, for reports from these centres are showing that substantial progress has been made and that remarkably beneficial results have been obtained from the use of radium in malignant disease.

Methods of Using Radium.

Since the application of radium in the treatment of new growths depends on subjecting the tumour to the rays, it is obviously necessary to bring the radium into such a position that the rays will fall on the

Fig 1.

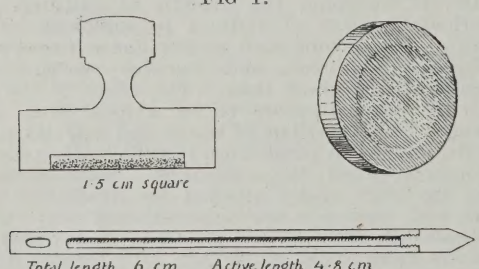


Diagram of surface applicators and section of a radium needle.

desired spot. The effective range of the rays of radium, with the quantity of the element at our disposal, is only about one centimetre, so that access must be gained to internal growths by one means or another—possibly by surgical operation. This constitutes what is known as "the surgery of access."

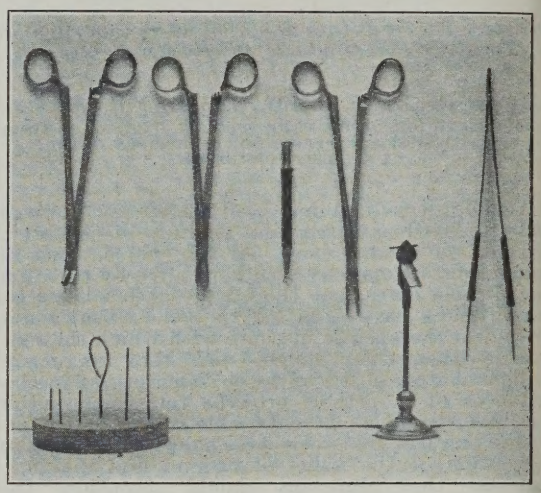
Surface Applicators.—Little difficulty is experienced with surface tumours, for radium salt, placed in a suitable container, may be applied to the desired spot and secured in position by adhesive strapping or a similar mechanical device. (Fig. 1.)

Radium Needles.—Surface applicators are obviously of little value for internal growths, such as tumours of the uterus, breast, or rectum. In such conditions use may be made of radium needles, the introduction of which marks a decided step in the evolution of radium therapy. The needle consists of a sealed glass tube in which is placed the required amount of radium, the tube is inserted into a container made of some metal, such as platinum, silver, or aluminium. By varying the composition and thickness of this metal container it is possible to cut out or screen rays that are not desired. These needles may be inserted in or around the tumour so that the rays may fall on the required spot. The dosage given may be varied by the amount of the radium in the needles, the thickness and composition of the screen, and the length of time the needles are left in position. (Fig. 2.)

Radium Emanation.—Instead of using the radium element itself for the purpose of irradiation it is possible to draw off from it the gas it yields which is known as radium emanation, or radon, and also has radio-active properties, and can be used for treatment.

Radon is obtained directly from radium by dissolving it in dilute hydrochloric acid and connecting the containing vessel with an ordinary mercury pump. The emanation, as it is formed, may then be collected over mercury and sealed in capillary glass tubes. After a solution of radium salt has been "pumped off" in this manner, it begins immediately to "grow" more emanation which, after a certain time, may be

Fig 2.



Radium needles with introducers.

pumped off again. One might suppose that the original stock of radium would soon become exhausted but the wonderful thing about it is that it wastes extraordinarily slowly. The rate is so slow that the radium may be considered inexhaustible. According

Table showing Rate of Decay of Radium Emanation.

Time.	Radio-activity remaining per cent.	Time.	Radio-activity remaining per cent.
12 hours	91·393	5 days	40·657
24 ,, ...	83·527	8 ,, ...	23·693
2 days	69·768	10 ,, ...	16·530
3 ,, ...	58·275	20 ,, ...	2·732
4 ,, ...	48·675	30 ,, ...	0·452

to Rutherford, if a gramme of radium were isolated i would take 1690 years for one-half of it to be trans formed into the emanation. Radon has marke radio-active properties but decays very rapidly; thu in four days it has lost more than half of its initia activity, and at the end of 30 days is practically inert. (See table.)

Fig 3.

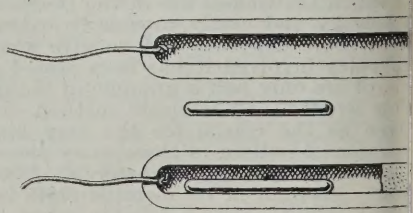


Diagram of a radon seed.

There are advantages and disadvantages in the use of the emanation rather than the element. One advantage is that the danger of loss of the costly radium, either by theft or acciden is reduced to a minimum, as the stock remains in th safe. Another advantage is that radium emanatio may be concentrated in capillary tubes and readil distributed in containers of any shape or size (Fig. 3 and these capillary tubes may be buried in the body an left in situ. A disadvantage is that the tubes con taining the emanation have a comparatively short lif owing to the rapid disintegration of the emanation.

Recently Dr. J. Muir, of New York, has introduce a very valuable method of using radium emanatio

This consists of a trocar and cannula (Fig. 4) which may be plunged into the tissues to the required depth; the trocar is then withdrawn, a radon seed introduced into the breech and pressed down into the tissue by means of the plunger. A fine thread attached to the seed allows it to be withdrawn after the requisite number of days. This method opens up a promising line of work.

Recent Work on the Medical Use of Radium.

Summaries of reports from research centres on the medical use of radium have been published by the Medical Research Council during the last

Fig. 4.

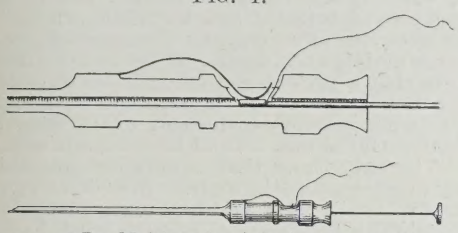


Diagram of Dr. Muir's radon introducer. (Approximate length 17·8 cm.)

few years and reveal substantial progress. It is well known that radium has been used successfully for a number of years in the treatment of rodent ulcers and of tumours on the surface of the body. Recently attempts have been made in various research centres to treat cancer in the deeper parts of the body, and special attention has been given to cancer of the uterus, breast, upper air passages, tongue, and rectum. Most of the remarks in this paper are based on personal observations made at one of these centres, but the writer is fully aware that much excellent work has been done elsewhere and in other countries.

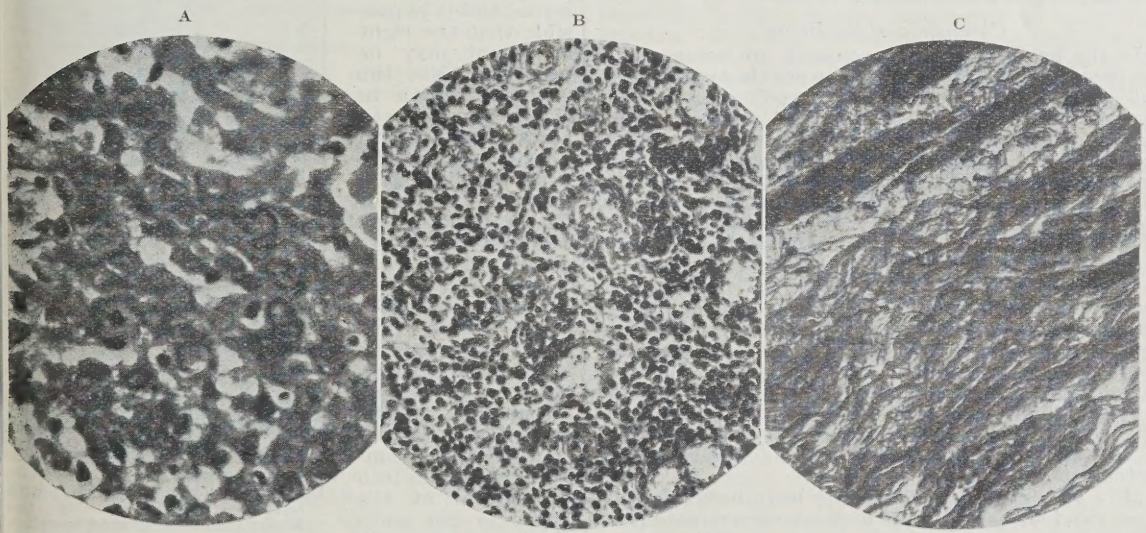
In reporting on results it is particularly desirable to avoid false impressions, either good or bad, and especially to refrain from sensational claims of wholesale cures which might raise false hopes. Reference, therefore, will be made rather to the disappearance of the signs and symptoms of disease than to the cure of patients, which can only be ascertained definitely after the lapse of years.

Carcinoma of the Cervix Uteri.

It became obvious at a comparatively early date that carcinoma of the cervix uteri is amenable to treatment by radium and some very remarkable and brilliant results have been obtained. The technique which has been followed and found successful has been burying radium needles in and around the tumour with a space of approximately ½ cm. of tissue between each needle. These needles have been allowed to remain in position for about 144 hours and then removed. In all cases a portion of the growth has been excised for histological purposes, so as to make sure that the patient was really suffering from malignant disease. It has been alleged that it is wrong to remove a portion of the growth because of the danger of disseminating the disease. We have not found this objection borne out in practice, and it was felt essential for the purpose of the research to have accurate histological records. The immediate effect of burying radium needles in the patient is nil. There is no feeling of warmth or pain or discomfort, other than may be excited by foreign bodies in the tissues. The benefits, if they occur, are to be expected in the course of a few weeks. In many instances the tumour formation, which was obvious before irradiation, disappeared, ulceration healed, and hæmorrhage—a prominent and distressing symptom of the disease—ceased.

The report of one centre states that of 146 cases of carcinoma of the uterus in which hæmorrhage was present before irradiation, all hæmorrhage ceased in 124—that is, in 84·9 per cent.—though in some of these it returned later. Out of 69 patients in whom a tumour formation was noted before irradiation, it disappeared completely in 60. In a series of 92 cases in which the carcinoma was of the ulcerative rather than the proliferative type, the ulceration disappeared either temporarily or permanently in 62. It is not to be inferred that all these people were cured, for some of them died of metastases in various parts of the body. Many of the patients were the subjects of advanced disease, people who were considered unfit for any surgical operation, and many of them no doubt had at the time secondary deposits which were out of the range of the action of the radium. It has, however, in my opinion, been definitely proved that the action of radium will, in many cases, cause a primary carcinoma of the cervix to disappear (Fig. 5),

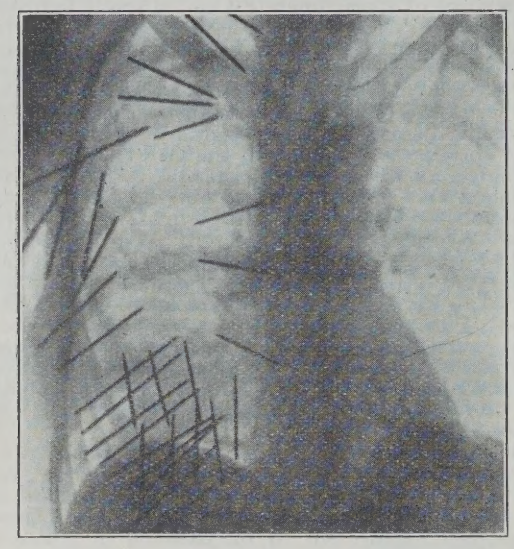
Fig. 5.



A = Histological preparation of squamous-celled carcinoma of the cervix uteri, taken immediately before the insertion of radium showing active growth of carcinoma cells. (×400.)
B = Histological preparation of the same growth, removed four weeks after irradiation, showing granulating tissue only. (×80).
C = Histological preparation of a portion of the same cervix uteri, 13 weeks after irradiation, showing much fibrosis and no growth. (×400.)

and bring about a cessation or diminution of the symptoms. It remains yet to be proved whether the patients so treated will remain free of disease, and for how long. It remains also to be proved, in the course of time, whether the operable patients will live longer

FIG. 6.



Radiogram from a patient with carcinoma of the breast, showing radium needles in position and barrage effects between breast and chest wall in the axilla, intra- and supra-clavicular and intercostal spaces.

if treated with radium or if submitted to surgical removal of the whole uterus.

Carcinoma of the Breast.

In the beginning of the research on carcinoma of the breast, the patients selected were those considered unfit for surgical operation on account of the widespread characters of the growth. It was soon found that, though the patients were in no sense cured, yet the action of radium on the primary tumour was marked and resulted in a definite shrinkage. Gradually a technique was evolved by which the action of radium could be made effective over a large area. This was obtained by burying needles underneath the breast between it and the chest wall, forming, as it were, a radium barrage. (Figs. 6, 7 and 8.) At the same time it was found possible to irradiate the glands in the axillary, supraclavicular, and parasternal regions. It was found also that, generally speaking, better results were obtained when the tumour was subjected to small doses of radium over a long period than to a large dose for a short time. The results so far have been most encouraging, though a great deal more work is required before any definite statement can be made.

Of a series of 13 patients who have been carefully observed, four have died of metastases in remote parts of the body, though all showed a shrinkage of the primary tumour. In the other nine the results have been very good; their tumours have disappeared and they remain in good health. They have not had mutilating operations, and they are very pleased with the results. It is not held that they are cured of their disease, but they are free of the signs and symptoms. Moreover, the results are good enough to justify the treatment of more patients in the same manner, and the choice of patients who are not in the advanced stages of the disease and who would be, in the general sense, fit subjects for surgical operation.

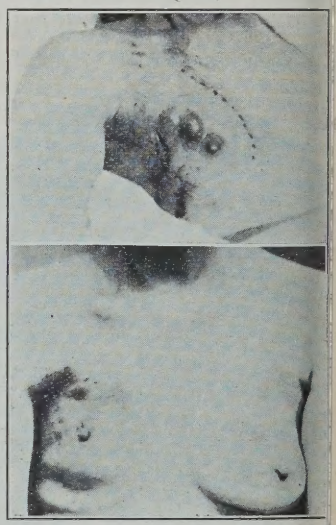
Carcinoma of the Upper Air Passages.

The difficulties of dealing surgically with tumours of the pharynx and larynx, and the extensive and mutilating operations which have been devised for their removal, are well known to surgeons. In radium we seem to have a method which may supplant these old operations. The report from one of the research centres is to the effect that in early cases, in which the disease is strictly limited, disappearance of the tumour and relief of all symptoms can be expected in a high percentage of cases. The after-results are also far superior to those which have been obtained from operation, for in many instances the vocal cords may become normal and the voice be restored.

Carcinoma of the Tongue.

Surgical treatment of carcinoma of the tongue and of the floor of the mouth has never given satisfactory results, whereas the effect of radium has in many instances proved brilliant and surprising, in that the primary growths have entirely disappeared, leaving the tongue mobile and intact. It seems very difficult to believe that a proved epitheliomatous ulcer of the tongue will disappear, that the skin will heal, and the tongue become mobile at the end of 17 days after treatment with radium. Yet I have myself seen that occur. The only thing that is at all comparable to it, in my experience, is the manner in which a gummatous ulcer will melt away and heal under the influence of antisyphilitic treatment. Enough work has been done on carcinoma of the tongue to show that in many instances the primary growth has disappeared completely, that the function and mobility of the tongue is almost unimpaired, and that the patient remains free from the primary growth at any rate for a number of months. This, of course, does not mean that the patient is cured, because of the possibility of dissemination into the lymphatic glands of the neck and into the lungs. The treatment of the lymphatic area remains a difficulty which has yet to be overcome, and it is possible that the right treatment may be to irradiate the primary growth in the tongue and to remove the lymphatic glands in the neck by block dissection. A great deal more work is required in this direction.

FIG. 7.



Photograph of a patient with advanced carcinoma of the breast immediately after insertion of radium needles. Punctures show where the needles were inserted. The lower half of the picture shows the same patient one year and eight months after. It will be seen that the tumour has disappeared.

Carcinoma of the Rectum.

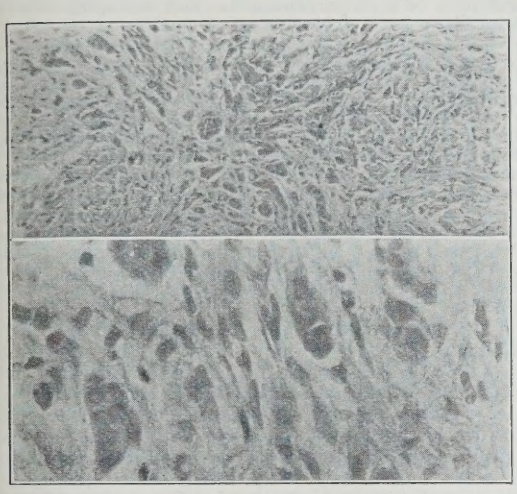
From work on the subject of carcinoma of the rectum it would appear that insertion of tubes containing radium into the lumen of the bowel is not sufficient to destroy the growth, owing to the limited range of the rays. Investigations are proceeding now with the object of obtaining access to a carcinoma of the rectum from the outside by a surgical operation, so that radium needles may be inserted about the periphery of the tumour. A report from one centre states that 15 cases of carcinoma of the rectum have been treated by radium barrage after open operation. The results show that in both operable and non-operable cases the primary growth can be destroyed, but that there is no evidence at present to show whether the spread of the disease into the lymphatics

and distant parts can be checked. These results certainly justify further attempts.

As an instance of the use of radium emanation in the treatment of malignant growths in the deeper parts of the body, the following case may be cited :—

A patient, aged 35, suffering from malignant new growth of the testis with secondary deposits in the lymphatic glands on the left side of the aorta, had his testicle removed by operation. The abdomen was opened, and 11 radon

FIG. 8.



Histological preparation from portion of tumour showing spheroidal-celled carcinoma. (× 70, × 440.)

seeds with a strength of 4·1 millicuries were introduced into the mass of glands and left there. Three weeks later the lump was obviously smaller, and after nine weeks it was hardly palpable. The patient remains well, and has put on 9 lb. in weight.

Conclusions.

The conclusion from these observations is that radium has a very definite action on malignant tumours, causing their disappearance. It would not be right at the present time to state that patients are cured, because it is difficult to state any period after which it is certain that there will be no recurrence. Sufficient has been said, however, to show that some patients have been freed from signs and symptoms of disease and have remained free for many months, without the extensive and formidable operations which are so distressing both to patients and to surgeons. I myself have been for some years in the position of an agnostic, not convinced of the benefits resulting from radium in the treatment of malignant disease, but watching its developments closely. I am now convinced that we have in radium a means of treating cancer which will prove of inestimable benefit.

A few weeks ago Mr. Hayward Pinch, the Director of the Radium Institute in London, gave an address at the Royal Society of Medicine in which he made the following prophecy, which he allows me to quote :—

"I make this statement deliberately and after the fullest consideration. I believe that in the very near future radium will form as important a part of the up-to-date surgeon's equipment as his scalpel, and he will be able to treat with confidence and success many cases of malignant disease which are at present regarded as inoperable and hopeless."

It is my deliberate opinion that he will be justified in his prophecy. It must, however, be fully realised that we are only on the threshold of the subject and that a vast amount of work is still required, involving the coöperation of physicists, chemists, physiologists, pathologists, and clinicians.

One of the things that hamper the work is the limited supply of radium, which is so expensive at the present time. If the advantages of the use of radium come to be realised by the medical profession and by the public at large it should not be difficult to increase the stock in this country. One of the functions of the British Empire Cancer Campaign might be to increase that stock, and even to go further and raise a fund for the foundation and endowment of a great national institution in which a large series of cases of malignant disease could be treated and the physical properties of radium observed.

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THE TREATMENT OF PERNICIOUS ANÆMIA WITH LIVER AND LIVER EXTRACTS.

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FOR the past two years the medical press in America has been commenting on the claims of Minot and Murphy [1] that a diet rich in liver produces remarkably beneficial results in the treatment of pernicious anæmia. It is only during the past year (and particularly since July, when a paper on the subject by the originators was read at the British Medical Association meeting in Edinburgh) that the profession in this country has realised the importance of this recent therapeutic advance. Minot and Murphy stated that, during the past three years, 125 cases of pernicious anæmia had been treated with a diet whose essential constituent consisted of 200 g. of liver per day, either raw or lightly cooked. They claimed that no case, which had taken liver regularly and in sufficient quantities, had ever relapsed, and that their blood counts had remained constantly between 4 and 5 millions. Such remarkable results have never previously been obtained by any method of treatment employed in the past. These claims have been substantiated by many workers in America and elsewhere. The present series is considerably larger, however, than any so far reported on in this country.[2 3 4] In addition, the results of treatment with several makes of liver extract are here given. Forty-two cases of pernicious anæmia have been treated with whole liver or liver extract. The blood counts of 28 of these, before and after treatment, are appended.

Credit must be given to Whipple and Robscheit-Robbins [5] for the original experimental observations on which the clinical trial of a high liver diet was based. These observers claimed that, in the treatment of experimental hæmorrhagic anæmias in dogs, a diet rich in liver exerted a remarkable regenerating effect. The clinical application of these observations has amply confirmed their claims.

A feature of pernicious anæmia which necessitates the acceptance of the value of any therapeutic remedy with great caution is the occurrence of natural remissions. A remission may occur, with or without treatment, at any period of the disease, and is subject to no known laws of onset, degree, or duration. Since the exhibition of liver produces an artificial remission which differs qualitatively in

no way from a natural remission, experimental proof of the specific action of a high liver diet is essential.

The evidence as to the beneficial action of liver is of two kinds. There is first the fact that no case of pernicious anæmia, treated by Minot and Murphy with a high liver diet, has failed to respond. Moreover, no case, having improved and continuing to take the treatment, has so far relapsed. It is certain that many of these cases during the past three years would have relapsed on any former method of treatment. So far, none of the cases quoted below has relapsed, but we are not prepared, until further time has passed, to make any definite assertions on this point. Secondly, there is the direct evidence of the regenerating effect of liver on the bone-marrow, as adduced from the presence of increased numbers of reticulocytes in the circulating blood. The same phenomenon occurs in a natural remission, but its constant production within narrow time limits from the onset of treatment may be taken as definite proof that the treatment is responsible for the production of the remission. With regard to this direct evidence, we are perfectly satisfied as to the specific action which liver exerts on blood formation.

Reticulation.

So important is the part played by "reticulocytes" in the production and clinical recognition of a remission that we propose briefly to review the phenomenon of "reticulation." For the demonstration of the phenomenon, vital staining—i.e., the treating of the blood with a suitable stain without any previous or concomitant fixation—is necessary. When a film stained in this way is examined under the microscope, reticulocytes are seen as erythrocytes containing a variable amount of stained material—sometimes in the form of a definite network, sometimes in the form of scattered granules or dots. The nature of the stained material is still doubtful, but it is usually taken as representing a cytoplasmic reticulum, and not as being a product of nuclear degeneration. However that may be, there appears to be no doubt that these reticulated cells are the relatively young cells in the circulation, the reticulum disappearing as the cells mature. The phenomenon is thus closely related to that of polychromasia, and to some extent also to that of punctate basophilia—all three of these probably representing "different morphological aspects of the same thing, the basophil substance of young erythrocytes," though the latter—i.e., punctate basophilia—is "an aspect seen only in pathological conditions; it is an indication of pathological alteration rather than of mere youth" (Gulland and Goodall [6]). A good account of the reticulated red cells (with excellent microphotographs) is given by Hawes,[7] in a paper on the results of the study of normal and infant blood, and of blood from cases of pernicious and other types of anæmia, due both to disease and to traumatic hæmorrhage. All his findings support the view that reticulocytes are normal young cells (and probably the same cells which show polychromasia when stained by the ordinary methods). Periods of clinically obvious blood regeneration were always found to be associated with an increased percentage of reticulocytes in the circulating blood. "In fact, all are agreed that the reticulated cells represent the young growing red cells. Why these cells are not seen in the ordinary fixed preparation, stained by ordinary means, is a mystery. Apparently these youngsters are differentiated only by the delicate method of vital staining" (Dameshek [8]). They are present in normal blood to the extent of 0·5 per cent. to 2 per cent. It is obvious that, if reticulation be "a criterion of youthfulness in circulating corpuscles" (Piney[9]), the proportion of reticulocytes in the circulating blood will be an excellent index of bone-marrow activity. We should expect that, in the case of pernicious anæmia, and taking the usual view of its pathology—namely, defective or perverted blood formation in the marrow—a period of improvement should be heralded by a rise, and a relapse by a fall, in the reticulocyte count. That this is so is well brought out by Dameshek [8]; and the reticulocyte rise during the first stage of a remission is shown in the cases quoted below.

Technique of Vital Staining.

Various methods are described in the papers quoted above, but the following methods have been found satisfactory: The dye used is brilliant cresyl blue, in 0·3 per cent. solution in absolute alcohol.

Fluid Preparations.—A drop of the dye is spread evenly over part of a clean glass slide, and the spirit allowed to evaporate; even drying is much facilitated by previously warming the slide. The thin film of dry dye is then polished by gently rubbing the slide, face down, on smooth paper. By means of another slide, a film of blood is spread in the ordinary way over the prepared part. A clean cover-slip is then immediately placed on the most suitable part of the film, and gently pressed down to ensure contact with the blood. This preparation keeps fluid for some hours. In it the reticulocytes are visible as cells containing network, granules, or dots, of blue-staining material, as above described. Several hundred red cells can be counted, and the number of reticulocytes seen during the process noted. The insertion of a suitable stop in the eyepiece facilitates counting. An oil-immersion lens is desirable, as slight degrees of "reticulation" are otherwise apt to escape notice.

This method of making the preparation is, in our experience, superior to that usually described—namely, taking a drop of blood on a cover-slip, which is then inverted on a prepared slide and gently pressed down. The cells are apt in this case, we have found, to run into clumps and rouleaux, and so render counting difficult. A source of error common to all such methods is that even distribution of the reticulocytes is not obtained. We have noted that these cells appear to have a greater tendency to stick to glass than have the mature cells, for, if the cover-glass of such a preparation be gently pressed upon, ordinary erythrocytes may be seen surging across the field in large numbers, passing the sluggish irregularly moving reticulocytes. Thus we may find aggregations of, say, 100 cells, with not a single reticulocyte among them, while in another part of the field there may be three or four reticulocytes in 30 or 40 cells. The errors in the percentage count due to uneven distribution of reticulocytes are greatly reduced by counting the numbers of reticulated cells present in widely separated fields; and, indeed, Dameshek [8] found "no material difference" in checking up this method of counting with the very accurate method (Luzzato and Ravenna) of making a "absolute" count in a Thoma-Zeiss chamber, the cover-glass of which has been lightly smeared with cresyl blue on its lower surface.

Permanent preparations can be made as follows. A cover-slip is charged with the dye and polished, as described above in the case of slides. A drop of blood is taken on a second clean cover-slip, which is then placed face downwards on the first, and the blood allowed to spread out between the two. After an interval of 30 to 60 seconds, the cover-slips are drawn apart and the films allowed to dry. They can then be stained with any of the usual blood stains, such as Jenner or Leishman, and mounted in the ordinary way. A significant point is that polychromasia and stippling are not seen in specimens so prepared, although a film of the same blood, stained with Jenner, &c., without previous vital staining, does show this phenomenon. This is further proof of the relation between reticulation, polychromasia, and stippling. These preparations have the advantage that they can be studied at leisure, but it is probable that counts made from them are less accurate than those obtained by the wet method described above, since some of the vital stain is washed out during subsequent procedures.

Clinical Significance of Reticulation.

The appearance of reticulocytes has already been described. They are red cells, within whose cytoplasm may be discerned blue staining material—either in the form of a definite network, or in the form of scattered threads and dots. The former are apparently the younger cells, and, as they mature, the reticulum undergoes intracellular disintegration and disappearance. Thus we have noted that, following liver therapy, the cells which first appear show

a well-marked reticulum, while during the period of decline the degree of reticulation becomes less and less until the great majority of reticulocytes present show only scattered dots of blue.

A further point requires to be noted. Reticulated cells are sometimes present in fair numbers in untreated cases of pernicious anæmia, which are nevertheless doing badly. It would appear, however, that these reticulocytes are abnormal, since Piney [9] (quoting Buckman and McNaugher) states that they can be differentiated from normal reticulocytes by their defective resistance to hypotonic saline solutions. It is also our impression that these cells are definitely larger than the reticulocytes which appear in the circulation during a remission. It is possible that they are "reticulated megalocytes" as opposed to "reticulated normocytes." This question still requires further investigation. It is, however, certain that the reticulocytosis occurring in association with a remission is quickly followed by a fall in colour-index, and also by a diminution in the average size of the corpuscles (as shown by measurement), so that the cells into which these reticulocytes mature are obviously smaller than was previously the case. It was, however, noted by Hawes [7] that even presumably "normal" reticulocytes—e.g., those appearing during regeneration after hæmorrhage—were invariably larger than normal erythrocytes, and this fact is well brought out in his microphotographs, suggesting that the physiological maturation of blood cells is accompanied by a diminution in size.

The significance of the phenomenon of reticulation has been dealt with at some length, because it is obvious that its recognition is essential in assessing the value of any given mode of therapy in pernicious anæmia. Remissions produced by treatment differ in no way from those occurring naturally. If, however, it is found that such a definite phenomenon as a marked rise in the reticulocyte count constantly occurs in such a definite period as five to ten days after the commencement of treatment, it is obvious that the possibility of coincidence is much reduced, and the claim of that particular mode of treatment to the term "specific" is strengthened. It is this aspect of the phenomenon of reticulation that appears to us to be of immediate interest.

Effects of Administering Liver.

In every case quoted below, the clinical symptoms and signs of pernicious anæmia were present. As these are so well recognised, it is, for the sake of brevity, not proposed to give the details of each case separately. The diagnostic points on which we lay particular stress are: (1) megalocytosis, with (2) high colour-index, (3) anisocytosis, (4) decreased platelets, (5) achlorhydria. In every case these five signs were present. The therapeutic results following liver treatment were also identical in every case. Again, for the sake of brevity, it is proposed to describe them in general terms only. From within 3 to 15 days from the onset of treatment, depending on the condition of the marrow, and the amount of whole liver given or the make of extract used, reticulated red cells appear in the circulation in increased numbers. By the time they reach their maximum the patient states that he feels better. The earliest visible sign of this well-being is seen as a slight rosiness of the skin covering the malar bones. After reaching their maximum the reticulocytes quickly diminish in numbers, but the rise in the red blood count and hæmoglobin percentage, which starts at the same time, continues. As the anæmia steadily disappears, all the classical signs associated with it likewise go. The blood picture in all its elements—red cells, white cells, and blood platelets—returns actually or practically to normal. Appetite returns; the patient puts on weight; and the gastro-intestinal symptoms improve. Symptoms referable to the nervous system, if of recent date, and of the nature of mild paræsthesias, may completely disappear. Where they are the result of actual nervous tissue destruction no cure can be expected, but further exacerbations do not occur (Minot and Murphy [10]). In short, within three or four months of starting treatment, the patient appears to have returned to normal health again. It should be noted that failure to continue the treatment results, sooner or later, in a relapse.

Treatment with Whole Liver.

The diet advocated by Minot might be summarised as being a well-balanced, ample diet, high in vitamins, low in fats and carbohydrates, and having as its essential daily component 200 g. of liver. No two cases require the same amount of liver for the specific effect to be produced. Amounts in excess of 200 g. may be necessary, or less may suffice. From practical experience, we are very strongly of opinion that unsatisfactory results are attributable to one fact alone, and that is the giving of insufficient quantities of liver. In several cases of the series quoted below, the patients were unable at first to take more than 4 oz. liver and 4 oz. liver juice per day. Rapid improvement was seen for the first six weeks, by which time the red count was approximately three millions. No further improvement could be produced until the amount of liver eaten was substantially increased. Some patients have a great abhorrence of liver, owing to its nauseating effect, and in these it is extremely difficult to bring the blood picture back to normal. It may be generally said that pernicious anæmia patients tolerate liver better than do normal persons, and we have invariably found that, as improvement continues, the dislike of the diet decreases. Some of the patients with counts of a million or below were so nearly moribund that the taking of solid food was an impossibility. Liver juice was tried, but this requires to be given in very large quantities before satisfactory results are obtained. In a personal communication to one of us (S. D.) Minot states that the giving of liver juice is the most unsatisfactory dietetic method, while raw pulped liver is the most efficacious.

During the last nine months of 1927, which corresponds roughly to the time when liver treatment was started in this country, one of us saw 27 cases of pernicious anæmia in private. Of these, 12 were in nursing homes or were so placed that the blood could be examined with fair frequency. Of these, 11 were treated with Minot's original diet, and their progress is shortly summarised below. The other was treated with Eli Lilly's liver extract and is included in the "extract" list.

CASE 1.—M. (male), aged 52. Third relapse. Nov. 2nd, 1927: R.B.C.'s (red blood cells), 3,060,000; Hb. (hæmoglobin), 63 per cent. Nov. 26th: R.B.C.'s, 3,680,000; Hb., 78 per cent. Has continued to improve since.

CASE 2.—M., 71. First attack. Oct. 10th, 1927: R.B.C.'s, 1,980,000; Hb., 48 per cent. Nov. 15th: R.B.C.'s, 4,520,000; Hb., 90 per cent. Has kept at same level since.

CASE 3.—M., 34. Old-standing pancreatic case; could never take arsenic. July 28th, 1927: R.B.C.'s, 3,190,000; Hb., 72 per cent. Oct. 26th: R.B.C.'s, 4,080,000; Hb., 80 per cent.

CASE 4.—M., 71. First attack. Oct. 11th, 1927: R.B.C.'s, 1,530,000; Hb., 42 per cent. Dec. 28th: R.B.C.'s, 4,100,000; Hb., 82 per cent.

CASE 5.—M., 55. Second relapse. July 9th, 1927: R.B.C.'s, 1,400,000; Hb., 35 per cent. Sept. 20th: R.B.C.'s, 4,000,000; Hb., 75 per cent. Has improved further since.

CASE 6.—F. (female), 63. Very chronic case; under observation for over 12 years. R.B.C.'s never got much above 3,000,000. Combined postero-lateral degeneration. Liver begun Oct. 4th, 1927: R.B.C.'s, 1,980,000; Hb., 46 per cent. Feb. 2nd, 1928: R.B.C.'s, 4,860,000; Hb., 90 per cent. Nervous symptoms much improved.

CASE 7.—M., 65. Very chronic case under observation for ten years. R.B.C.'s varying from 2,500,000 to 4,000,000. Liver begun Nov. 4th, 1927: R.B.C.'s, 2,170,000; Hb., 53 per cent. Nov. 18th: R.B.C.'s, 3,360,000; Hb., 70 per cent. Has done well since.

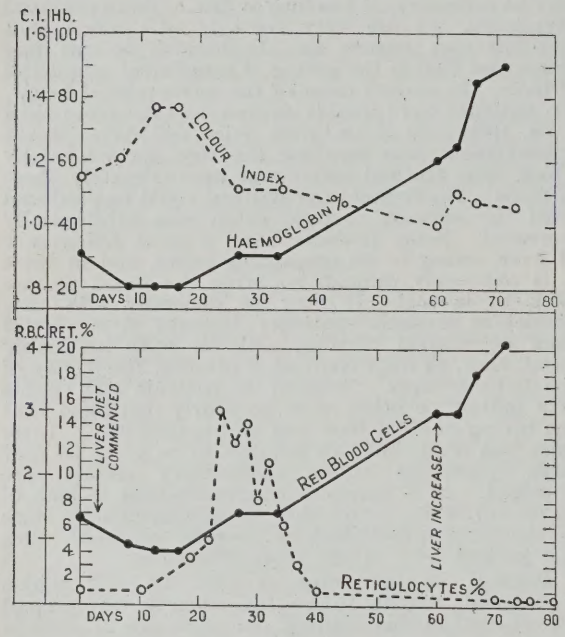
CASE 8.—F., 68. Chronic case of at least four years' duration. Marked postero-lateral degeneration of spastic

type. Liver begun Sept. 21st, 1927: R.B.C.'s, 3,120,000; Hb., 70 per cent. Dec. 16th: R.B.C.'s, 4,920,000; Hb., 90 per cent. Nervous symptoms worse.

CASE 9.—F., 28. Puerperal case. Liver begun October, 1927: R.B.C.'s, 2,400,000; Hb., 48 per cent. Dec. 17th: R.B.C.'s, 5,180,000; Hb., 80 per cent.

CASE 10.—M., 55. First attack but of chronic type. Marked weakness of arms, legs almost free. Liver begun July, 1927: R.B.C.'s, 3,260,000; Hb., 68 per cent. Feb. 4th, 1928: R.B.C.'s, 5,360,000; Hb., 100 per cent. Arms almost entirely recovered; legs completely.

FIG. 1 (Case 12).



CASE 11.—F., 40. Second relapse. Liver begun April, 1927: R.B.C.'s, 1,820,000; Hb., 50 per cent. Dec. 22nd: R.B.C.'s, 5,460,000; Hb., 85 per cent. Died of uræmia soon afterwards. Case was remarkable because there were throughout enormous numbers of nucleated R.B.C.'s, both megaloblasts and normoblasts, averaging about 11,000 per c.mm. and also a persistent polymorph leucocytosis from 15,000 to 19,000.

In addition, 16 other patients have been seen for diagnosis. Three of these died before the treatment was well started—one of cardiac failure, one of cerebral thrombosis or hæmorrhage, and one from uncontrollable vomiting, probably uræmic. The remainder are reported to be doing well on liver diet.

The following cases were under observation in the Royal Infirmary, Edinburgh:—

CASE 12.—M., 56. Third attack. (See Fig. 1.) Liver diet started on Nov. 14th, 1927, when the R.B.C.'s were at 1,340,000, and Hb. 30 per cent. Count continued to fall for some days, but by the eighteenth day reticulocytes had risen to 15 per cent., and blood thereafter continued to improve. Slow rate of progress, probably due to the fact that patient was unable to take full quantity of liver owing to teeth having been recently extracted. Commenced eating liver satisfactorily and regularly (6 oz. liver + 4 oz. liver juice per day) about Jan. 12th, 1928, since when, as will be seen, improvement has been much more rapid.

CASE 13.—M., 66. First (?) attack. Liver started Sept. 8th, 1927: R.B.C.'s, 2,600,000; Hb., 55 per cent. Oct. 10th: R.B.C.'s, 4,800,000; Hb., 64 per cent.

CASE 14.—M., 50. Third attack. Liver started Sept. 25th, 1927: R.B.C.'s, 1,850,000; Hb., 40 per cent. Nov. 17th: R.B.C.'s, 4,280,000; Hb., 70 per cent.

CASE 15.—M., 28. First attack. Liver started Sept. 9th, 1927: R.B.C.'s, 1,350,000; Hb., 34 per cent. Oct. 20th: R.B.C.'s, 4,890,000; Hb., 78 per cent.

CASE 16.—F., 39. First attack. Liver started August 8th, 1927: R.B.C.'s, 1,660,000; Hb., 35 per cent. Sept. 11th: R.B.C.'s, 3,270,000; Hb., 65 per cent.

CASE 17.—F., 58. First attack. Liver started May 2nd, 1927: R.B.C.'s, 2,000,000; Hb., 50 per cent. June 30th: R.B.C.'s, 4,130,000; Hb., 82 per cent.

CASE 18.—M., 66. First attack. Liver started Feb. 18th, 1927: R.B.C.'s, 1,720,000; Hb., 45 per cent. March 27th: R.B.C.'s, 2,960,000; Hb., 70 per cent. (Patient left hospital.)

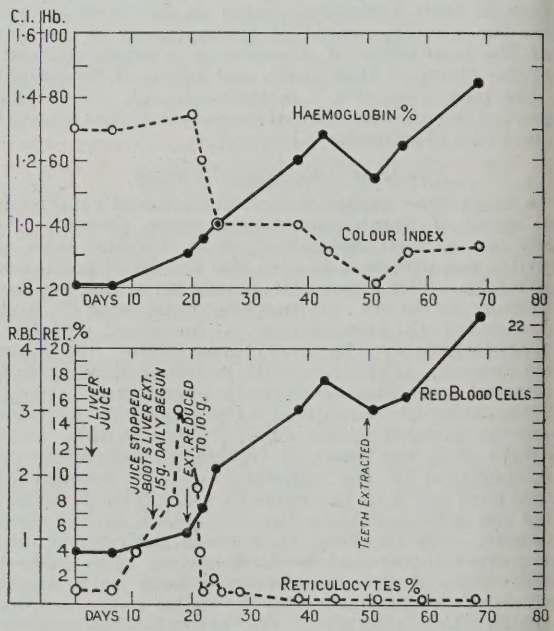
CASE 19.—M., 46. Second attack. Liver started Sept. 8th, 1927: R.B.C.'s, 2,670,000; Hb., 60 per cent. Nov. 7th: R.B.C.'s, 3,500,000; Hb., 60 per cent.

The importance of giving sufficient quantities of liver is clearly brought out in the blood counts of the earliest cases treated. They received what the writers now recognise to have been an insufficient quantity.

Treatment with Liver Extracts.

Cohn and his co-workers [11] have shown that, by a method of fractioning, a non-protein substance can be obtained, 5–15 g. of which is as efficacious as 200 g. of whole liver. As this substance is soluble in water, and exerts its action when given by the mouth, the treatment is greatly simplified for patients who are too ill to take solid substances, and is far more pleasant to those who object to the large amount of liver it is essential to eat. For these reasons, liver extracts will, in the future, largely supersede whole liver. Six different preparations have been tested, one being American, two being German, and the remaining three British. Since all these preparations were found to be active, the manufacturing process appears to present little difficulty. Their mode of action is identical with, but even more striking than treatment with whole liver, because it is possible to give the specific factor contained in 1000 g. of liver in one dose.

FIG. 2 (Case 20).



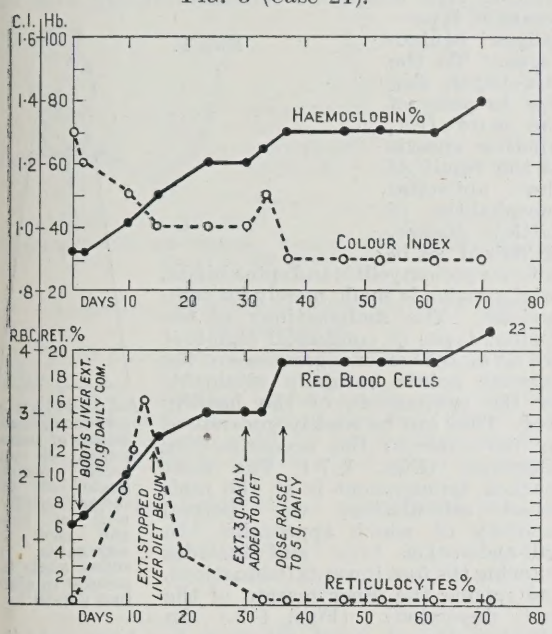
It is therefore unnecessary to recapitulate the history of the clinical improvement which follows their exhibition.

1. *Liver Extract Manufactured by Messrs. Boots.*—This product has received the most thorough trial of all the extracts, as one of us has been in touch with Dr. P. C. Brett, of Boots Pure Drug Co. since the inception of his researches. Four cases have been treated, either with the extract alone or in conjunction with whole liver. Fig. 2 shows its action when given alone; Fig. 3, when given with additional whole liver.

CASE 20.—M., 52. Third attack. (See Fig. 2.) Admitted Nov. 15th, 1927: R.B.C.'s, 740,000; Hb., 20 per cent. Patient very gravely ill; delirious; vomiting constantly; had really been sent into hospital to die. Was put on liver juice at once. Boots's liver extract, 15 g. daily, commenced on Nov. 28th (liver juice being stopped). Four days later reticulocytes had risen to 15 per cent., rise having started under liver juice. On Dec. 3rd daily dosage was reduced to 10 g.

CASE 21.—F., 45. First attack. (See Fig. 3.) On Nov. 14th, 1927, Boots's liver extract, 10 g. daily, commenced, when R.B.C.'s were 1,240,000 and Hb. 32 per cent. By tenth day reticulocytes had risen to 16·5 per cent. On

FIG. 3 (Case 21).



Nov. 29th liver extract was stopped and 4 oz. liver given daily, along with 4 oz. liver juice. R.B.C.'s rose to 3,000,000, but there progress appeared to be arrested. On Dec. 15th Boots's liver extract, 3 g. daily (and later 5 g.), were added to diet. Count rose to 3,800,000, and finally to 4,300,000.

CASE 22.—F., 27. Admitted to Royal Infirmary Oct. 19th, 1927, following confinement in mid-September. R.B.C.'s, 1,500,000; Hb., 33 per cent.; W.B.C.'s, 9000. 4 oz. liver and 4 oz. liver juice given daily. A month later R.B.C.'s were 2,500,000; Hb., 47 per cent. The slight degree of chronic nephritis which had been present since before confinement developed into an attack of acute Bright's disease (associated with a leucocytosis of 12,000), necessitating the temporary stoppage of whole liver diet. After a further month of modified liver diet, the count remaining stationary, 5 g. Boots's liver extract was added to the diet. After another month, R.B.C.'s were practically 4,000,000; Hb., 65 per cent. The conjunction of nephritis and leucocytosis is referred to below.

CASE 23.—F., 51. First attack. Liver diet (4 oz. liver + 4 oz. juice per day) started Oct. 18th, 1927: R.B.C.'s, 1,000,000; Hb., 25 per cent. After one month, R.B.C.'s, 2,500,000; Hb., 60 per cent. No improvement for next four weeks (owing to patient being unable to take more than quantity indicated above). Boots's liver extract, 5 g. per day, added to diet. Count immediately began to rise, reaching 3,700,000, and Hb. 60 per cent., in 12 days.

2. *Extract Prepared by British Drug Houses, Ltd.*

CASE 24.—M., 66. Second attack. Liver extract, 2 vials daily, started Jan. 20th, 1928.

Date.	R.B.C.'s.	Hb.	Reticulocytes.
Jan. 19th ..	890,000 ..	30 per cent. ..	6·5 per cent.
,, 23rd ..	— ..	— ..	16 ,,
,, 25th ..	1,290,000 ..	38 per cent. ..	9 ,,
,, 28th ..	1,610,000 ..	40 ,, ..	3 ,,
Feb. 1st ..	— ..	— ..	2 ,,
,, 7th ..	2,760,000 ..	65 per cent. ..	0·5 ,,
,, 20th ..	3,960,000 ..	70 ,, ..	0·5 ,,

During week before admission, this patient had eaten 1½ lb. of liver, which explains the high initial reticulocyte count and quick response.

3. *Extract Prepared by Burroughs Wellcome.*

CASE 25.—M., 48. Third attack. Liver extract, 2 vials daily, started Jan. 13th, 1928.

Date.	R.B.C.'s.	Hb.	Reticulocytes.
Jan. 11th ..	1,100,000 ..	26 per cent. ..	0·5 per cent.
,, 20th ..	1,060,000 ..	24 ,, ..	4·0 ,,
,, 21st ..	— ..	— ..	9·0 ,,
,, 24th ..	1,470,000 ..	35 per cent. ..	8·0 ,,
,, 28th ..	1,620,000 ..	40 ,, ..	0·5 ,,
Feb. 7th ..	2,400,000 ..	62 ,, ..	0·5 ,,
,, 28th ..	4,040,000 ..	85 ,, ..	0·5 ,,

CASE 26.—M., 51. First attack. Extract started Jan. 27th, 1928 (2 vials daily).

Date.	R.B.C.'s.	Hb.	Reticulocytes.
Jan. 26th ..	2,540,000 ..	60 per cent. ..	0·5 per cent.
Feb. 2nd ..	2,890,000 ..	65 ,, ..	9·0 ,,
,, 7th ..	3,200,000 ..	75 ,, ..	2·0 ,,
,, 29th ..	4,240,000 ..	90 ,, ..	0·5 ,,

4. "*Hepatopson*" (*a Desiccated Liver Preparation, made by the Promonta Manufacturing Company*).

CASE 27.—F., 67. Second attack. Given 100 g. "Hepatopson" daily, starting Dec. 11th, 1927. Dec. 10th: R.B.C.'s, 850,000; Hb., 20 per cent. Reticulocytes, 3 per cent. Reticulocytes rose steadily reaching 30 per cent. on tenth day, returning to normal by twentieth day. Jan. 3rd, 1928: R.B.C.'s, 2,450,000; Hb., 60 per cent. No further improvement occurred during next two weeks. Daily dosage therefore increased to 150 g. Jan. 24th: R.B.C.'s, 3,050,000; Hb., 75 per cent. Feb. 1st: R.B.C.'s, 4,000,000; Hb., 80 per cent.

5. *Liver Extract Made by Eli Lilly and Co.*

CASE 28.—M., 63. First attack. Extract (equivalent to 500 g. liver daily) commenced Dec. 12th, 1927, when R.B.C.'s were 1,550,000 and Hb. 43 per cent. Feb. 1st, 1928: R.B.C.'s, 5,010,000; Hb., 85 per cent. Reticulocytes followed usual course. Patient could not eat liver at all, but had no difficulty with extract.

6. A German preparation, "*Hepatrat liquid*" (Nordmark), was, in the absence of any cases of pernicious anæmia, tried in two cases of secondary anæmia (Banti's disease, and chronic nephritis). The activity of the preparation was demonstrated by the production of a reticulocyte rise in both cases. In the case of the nephritic the reticulocytes reached 15 per cent. on the twelfth day of treatment.

Conclusion.

One of us has had a long experience of pernicious anæmia and of the remissions that can be produced by all the methods of treatment formerly in use. The impression formed of treatment by liver and liver extract is that its effects are more promptly, rapidly, and regularly produced than by any former method, although occasionally treatment by arsenic or sometimes no treatment at all may be followed by remissions as rapid in their commencement. The period of recovery is certainly shortened. The most striking example of this is Case 2 of the private series. The recovery is more continuous. The production of a colour-index below unity, which under previous methods of treatment has been found to occur in cases which are going to do well, regularly develops under liver therapy. The most important point, however, is that recovery is more complete. Formerly one had too often to be content with a count of about 3,500,000 R.B.C.'s; now an extra million or more may be confidently expected; the whole blood picture returns to the normal with much greater frequency and certainty, and apparently remains so indefinitely, so long as treatment is persevered with. Two cases have been seen whose treatment was begun in America; they are not included in the foregoing lists. The first had begun liver treatment in 1925 and continued it steadily. The blood was examined twice at an interval of about a year and was practically normal on both occasions. The second was seen once 18 months after treatment was begun and the blood was normal. Both were in vigorous health. This return to vigorous health is certainly

more frequent and complete—and, let us hope, permanent—than has ever been experienced as a result of previous methods.

It is important to notice that liver treatment is effectual at any age, and still more that it acts just as well in chronic cases as in acute ones. Cases 6, 7, 8, 10, and 11 of the private series had had arsenic ad nauseam in various forms, had ceased to respond to it, and could no longer tolerate it, but they answered just as promptly to liver as if they had been fresh cases. It appears to be immaterial to the success of the treatment whether the patient is in his first attack or has suffered several relapses. It seems to be a matter of indifference whether the patient is treated with liver or with the liver extracts which we have tested. All the latter seem to be efficacious, and it will be a matter of personal liking and convenience whether liver or the extract is chosen for treatment.

Is the treatment free from risk? In the great majority of cases it certainly is. Nothing more serious than an occasional temporary diarrhœa is likely to occur, and this can be dealt with by stopping fruit and vegetables for a few days. But it is to be noted that renal complications may arise, though their connexion with liver treatment is not definitely proved. One of our hospital cases had an acute nephritis and Case 11 died of uræmic vomiting and convulsions. One of us long ago pointed out that the only condition which will cause a persistent leucocytosis in pernicious anæmia is kidney mischief. In that case the leucocytosis should have been a warning, but the patient was in such magnificent health until the final collapse that the warning was disregarded. No pernicious anæmia comes to the post-mortem table with normal kidneys, but this is hardly ever evidenced by albuminuria. In cases with a persistent leucocytosis, it would probably be wiser to trust to liver extract alone, which contains no protein, and not give the large quantities of red meat advocated in Minot's original diet.

In the first few private cases one was inclined to give arsenic as well as liver, on the principle that it is unwise to throw away a crutch too soon, but that was soon found to be unnecessary. Hydrochloric acid is of value in improving appetite and hence may be used in combination with liver therapy. It is certainly not responsible for the remarkable improvement following the exhibition of liver, as equally good results are obtained in cases which have never received any acid.

Minot has formed the opinion that the nervous symptoms are not benefited by liver treatment, except in so far that as the muscles become stronger the patient can walk better. We are inclined to differentiate a little more. It seems to us that in cases in which the symptoms are of the tabetic type very marked improvement may occur, but in cases of the spastic type we have, so far, either seen no improvement or, as in Case 8 of the private series, a distinct increase of spasticity may supervene, possibly because the muscular tone is increased.

Part of this work was done under a grant by the Medical Research Council. Our thanks are due to those physicians of the Royal Infirmary, Edinburgh, who have kindly allowed us to make observations on their cases.

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CLUB-FOOT: ITS NATURE AND TREATMENT.

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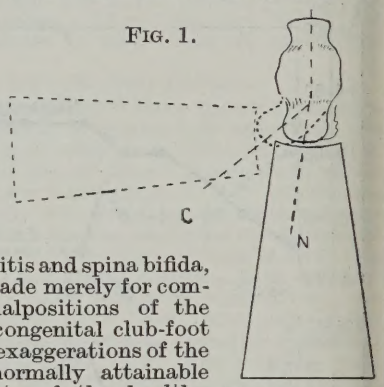
ONE infant in every thousand is born with a foot fashioned in the form of a club, but in which, although there is deformity, there is no paralysis of muscles. A variety of distortions occur, and the remarks that follow are concerned chiefly with the common type—talipes equino-varus. To the mis-shapen feet due to palsy of the muscles, whether spastic as the result of the antenatal encephalitis of Little's disease, or flaccid as in anterior poliomyelitis and spina bifida, brief allusion is made merely for comparison. The malpositions of the various types of congenital club-foot are no more than exaggerations of the extreme points normally attainable by the movements of the healthy foot. They can be readily understood by reference to the accompanying diagrams. (Figs. 1–7.) The most marked derangement is at the mid-tarsal articulation, the normal mobility of which approaches the ball-and-socket type and includes pointing the foot inwards (adduction), and raising the inner margin of the foot (inversion). (Figs. 1–3.) In addition, though scant attention has been paid to it, flexion (cavus) is an element of this deformity and needs to be reckoned with. (Fig. 4.) Comparatively little movement occurs at most of the other joints, and the foot is therefore shown in the diagram as consisting of two main parts separated by the mid-tarsal joint. The extreme foot-drop (equinus) at the ankle-joint is an obvious feature calling for no further comment. (Fig. 4.) Function is poor in the club-foot. Even at birth only a small range of passive movement is possible, and time reduces this still further. The fixity is not due to muscular defect but to the foot being "cast in a faulty mould."

FIG. 1.



Adduction of fore-foot; angulation of astragalus. N indicates normal angle of 10° inward deflection of head and neck of astragalus. C shows angle increased in club-foot (30–40°).

FIG. 2.

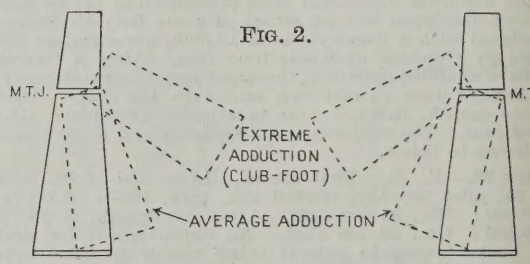


Diagram of pedal mechanism. M.T.J. = Mid-tarsal joint.

Ætiology is still a matter of speculation. In this series of 30 cases these facts deserve record:—

1. It occurs in 22 males (73 per cent.) and 8 females (27 per cent.).

2. There are 16 cases of double club-foot (53 per cent.) and 14 of single (47 per cent.).

3. The liability to associated defects is above the average—i.e., present in 4 (13 per cent.).

4. No evidence of hereditary or familial influence was found except that two cases came from one family.

5. Two patients, one of whom was also the subject of multiple ankyloses of both arms, had perfectly normal twin brothers.

FIG. 3.

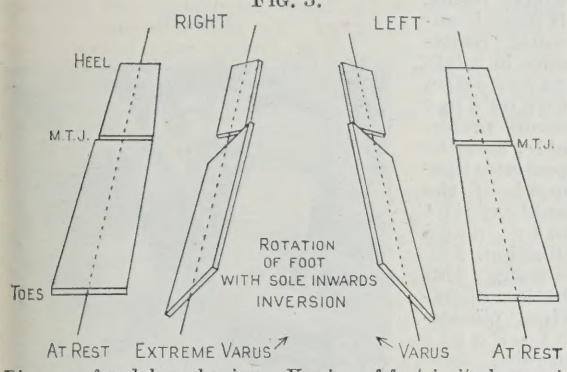


Diagram of pedal mechanism. Version of foot in its long axis. M.T.J. = Mid-tarsal joint.

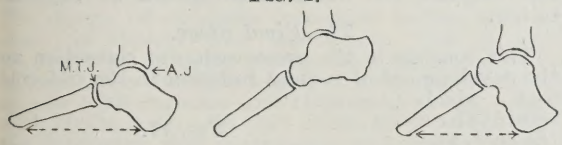
Anatomical Obstacles to Correction of Talipes Equino-varus.

1. Tight shortened capsules of joints on inner side of foot.

2. The very resistant tendo Achillis and ligaments at the back and inner side of the heel, which hold the os calcis twisted with its inner surface meeting the internal malleolus and the heel pulled up behind the ankle.

With age the deformity is accentuated and the

FIG. 4.



The left-hand diagram (average arch) shows the heel and toe spaced well; the middle one shows foot-drop at the ankle; whilst the right hand shows fore-foot-drop. M.T.J. = Mid-tarsal joint. A.J. = Ankle-joint.

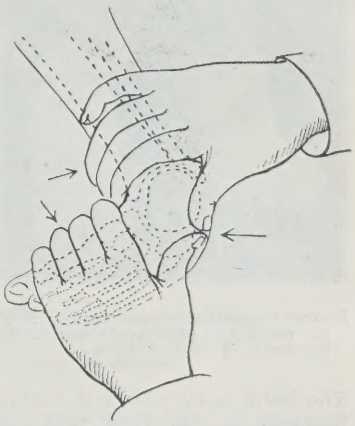
tarsus undergoes bony consolidation. Slight compensation is afforded by outward rotation of the femora.

Treatment.

It is said that no other deformity presents such a record of failures and incomplete cures. Such a reputation is a grave challenge to surgery. It seems to justify some remarks on a method, evolved during the treatment of a series (30 patients) of cases of talipes equino-varus, which ensures a well-shaped foot. A long, hard struggle is involved, but at the end there is the encouraging and cheerful assurance that muscles of balanced power are present and ready to work the re-formed foot. Though surgery has, since the days when subcutaneous tenotomy was started by Stromeyer, come to handle the advanced cases still more heroically, the best results naturally follow when the cripple is caught at birth. Then the structures are tender and yielding and there is no osseus tissue to remodel. It is to these early cases especially that the following method applies. Patience and tenacity on the part of the surgeon are demanded to an unusual degree. It is impossible to overstress the preliminary warning that unless he can win and retain the steady coöperation of the parents from the start he will come short of success, despite full knowledge and skill. The mother must be clearly told at the outset that active treatment for 12 to 18 months, entailing regular and frequent visits, will be necessary, and a further period of remedial exercises and supervision for two to three years. Otherwise months of tedious toil will be spent in vain, and the golden opportunity of early infancy will be gone. As a final persuasion it may be added that the treatment inflicts no wound beyond a trifling puncture of the skin; but neglect will lead to the necessity for a severe operation to rectify the foot later on.

The main steps in treatment are: 1. Over-correction of the deformity by manipulation. 2. Maintenance of rectified position for some months. 3. Exercise and constant supervision for years.

FIG. 5.

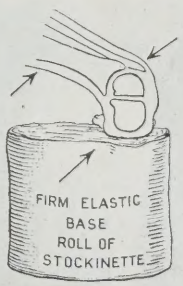


Corrective hand grip. Bone outlines dotted. Astragalus seen to underlie lateral convexity of foot against which pressure is made by the thumbs.

Treatment should commence at birth. Instructions are given for the foot to be held twisted outwards at suitable times during the day. At the second week of life the method of continuous rectification is instituted, as better adapted to the circumstances of limited time and means of average parents.

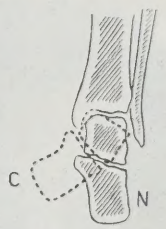
A general anæsthetic is used. Three elements only in the deformity receive attention in the first stage. When these are corrected the cure of the remaining foot-drop follows more easily. They are: adduction, inversion, and cavus. The foot is held with the thumbs pressed on the outer aspect of the astragalus, which becomes a fixed fulcrum on which leverage is obtained to force outwards the fore-foot and leg gripped by the fingers of the left and right hand respectively. Steady pressure is maintained for some minutes. This overcomes adduction. (Fig. 5.) At the same time the concavity on the inner side of the ankle is flattened out by the counter-pressure of the table on the inner margin of the heel. This brings the os calcis into its normal position underneath the tibia. (Figs. 6 and 7.) The element of cavus will obviously be reduced by this same corrective pressure. The shortened ligaments begin to yield and allow the foot to be held without effort in partial correction. It is so retained, and a strip of 1 inch wide zinc oxide strapping is laid along each side of the leg (Nutt). These strips are about 3 inches longer than the limb and at the foot are passed through stockinet with which the leg is protected. Occasional sores may call for ointment dressing. Plaster-of-Paris bandages are applied from the foot to the

FIG. 6.



Straightening bow-ankle. Arrows indicate corrective pressure applied to straighten the bent tibio-tarsal region and bring tarsal bones out into vertical alignment with tibia.

FIG. 7.



Coronal section of ankle (left). N = Normal vertical subtibial position of hind tarsus (very slight knock-ankle). C = Club-foot. Subtibial tarsal bones drawn inwards to submalleolar (marked bow-ankle).

knee, and among the turns are caught the two projecting ends of strapping. By this means is overcome, with few exceptions, the objectionable tendency of plaster splints to slide down the leg. If it fails, the plaster must reach to the lower third of the thigh. The splint needs moulding and supporting until hard.

If resistance calls for it I perform syndesmotomy of the talo-calcaneo-scaphoid capsule and fore part of the deltoid ligament through a puncture of the skin with a tenotome in front of the internal malleolus. The same site serves for tenotomies of the tibiales, but experience seems to show that these are superfluous, and possibly even harmful as contributory to flat-foot.

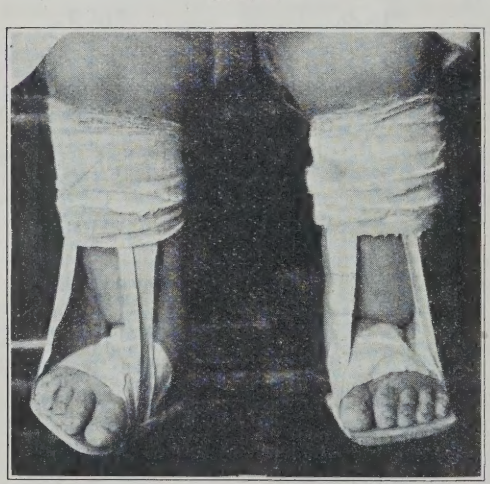
FIG. 8.

Double congenital equino-varus. Feet in retentive plaster-of-Paris after tenotomy of tendo Achillis.

This treatment is carried out entirely in the out-patient department and the mother is cautioned, before leaving, about signs of undue compression by the bandage. The toes should be inspected next day. The baby is to return in two weeks, and the night previous to the next visit the mother soaks off the plaster, bathes the leg and leaves it unsplinted. By this brief freedom retarded growth, one of the drawbacks of immobilisation treatments, is largely averted, as the foot has time to relax.

Every two weeks the foot is wrenched and the plaster renewed, until at about four months the unsupported foot remains in the valgus position. Two or three wrinkles in the skin anterior to the external malleolus afford confirmation that the underlying astragalus has receded to the inner aspect of the foot. Mild eversion of the os calcis is a welcome sign.

FIG. 9.

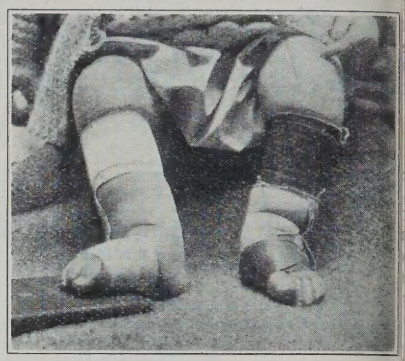


Double talipes equino-varus feet with sole-plates and retentive strapping.

So far no attention has been paid to the equinus. It is now, however, when the os calcis is in its normal position below the astragalus that this can the more advantageously be treated. To correct this drop-foot the tendo Achillis is divided subcutaneously just above the heel, and the foot forcibly dorsiflexed. In some cases one is tempted to omit the use of the knife, as the foot may seem to yield by manual force without tenotomy. This is deceptive, for, although vigorous upward pressure on the sole might still seem to produce dorsiflexion, it would do so not by drawing the heel down but by tearing the plantar ligaments in the mid-foot and so angulating the foot at the medio-tarsal joint. A V-shaped foot would result.

If there is unusual resistance in a late case, open tenotomy seems preferable, and the posterior ligament of the ankle-joint may need division. Following this little operation, plaster-of-Paris applied over sterile dressings and stockinet (Fig. 8) is renewed with increasing correction every few weeks until at the sixth to eighth month the foot's natural posture when released is slight calcaneo-valgus.

FIG. 10.



Double equino-varus corrected and with retentive strapping applied, but no sole-plate.

At the conclusion of this stage of treatment is the "fool's paradise," for, to the mother, the foot appears well corrected and further irksome visits superfluous. But many months must elapse before the mis-shapen bones can grow to fit snugly into the corrected position and stabilise the cure. This should be explained to her.

The Final Stage.

This consists in the preservation of correction and the development of normal function in the re-formed foot which establishes the cure. The foot is maintained in over-correction by strapping, combined with a light wooden sole-plate. (Fig. 9.) If strapping alone is used (Whitman), its upward pull is confined to the instep instead of spreading over the whole sole. (Fig. 10.) This would further induce the cavus deformity already noted as inherent in club-foot. (Fig. 4.) It is manipulated into extreme over-correction at daily exercises and whenever the parent finds opportunity. During the next few weeks it is time to take stock of the situation and assess the effect of treatment, as to whether there may be an excessive abduction of the foot and pes planus or, what is much more frequent, a tendency to relapse. Either of these extremes, appropriately dealt with at this stage, can be controlled. At about 12 months, according to the development and

FIG. 11.

Double equino-varus corrected and wearing retentive shoe with day over-shoe.

function of the parts, the foot is measured for special night shoes and day over-shoes. (Fig. 11.)

Meanwhile, the child attempts to walk, exercises are continued, and during the second year boots are fitted, which may need special features if relapse threatens. Where the child attends regularly there is seldom need for the surgeon to do more than supervise, but further enforced splintage in plaster or even tenotomy are not infrequent necessities. The objection that growth is liable to be retarded by the earlier months of immobilisation calls for an intensive course of remedial exercises to make good any deficient power. The infant is now at an age to coöperate in simple exercises.

Difficulties in Treatment.

Among the difficulties to contend with the chief is non-coöperative parents. This may be due to the fact that they cannot, from lack of brains, time or money, or simply will not, follow expert advice. Thus, the parents of one case refused to allow their child to stay in hospital, and it was impossible to pursue the treatment for more than a few months, since they were denizens of a Welsh mountain fastness. In my cases this failure to maintain attendance has been almost the chief stumbling-block. Often bronchitis, whooping-cough, one of the exanthemata in the family, a twin babe or the advent of another infant interferes. It cannot be repeated too often that an almost unbroken record of attendances is necessary if complete success is to be ensured. A further hindrance is that the plaster-of-Paris splints are apt to slide off if the leg is fat and shapeless. Methods of overcoming it have already been mentioned. In such cases, too, especially in the early months and with less scrupulous parents, the skin is liable to excoriation which may call for temporary remission of plasters. Also, if the plaster slips and the mother is unable to bring the child within the next day or two a friction sore may develop.

The danger of excessive correction leading to pes planus has already been mentioned. One of my cases shows it. Intoeing is frequently noticeable in a mild form when the child begins to walk, but tends to disappear with exercises and thickening of the outer margin of the boot. No part of the foot escapes the varus deformity, and metatarsus and hallux varus need their full share of correction. This they are apt to miss if the continuation of the plaster to the end of the inner margin of the big toe is omitted. An unwelcome proof that the hallux is receiving due outward pressure is the resulting tendency for the second toe to be squeezed upwards, overriding its fellows. This can be avoided and the toe kept in line with the rest of the row if the orifice is made shallow in moulding the plaster. By this means the beneficent outward pressure on the big toe is transmitted from one toe to the other throughout the whole row. Intoeing and traces of equino-cavus have proved the most frequent residue of the deformity. Concentration on the feet must not allow the surgeon to ignore intercurrent genu valgum.

Additional Measures in Late Cases.

A very useful and permanent corrective to varus tendon transplantation to maintain the correct position. This can easily be effected by taking the tendon of the tibialis anticus (or part of it) to the base of the fifth metatarsal. Bankart has found a silk ligature passed along the same path an efficient retainer, though one cannot avoid a dislike for the insertion of irritating foreign matter.

In cases of late equinus and associated cavus a modified Steindler's operation, exposing the tight capsules of the ankle- and tarsal-joints on the inner side coupled with forcible wrenching into well-marked valgus, is a useful measure combined with secondary tenotomy of the tendo Achillis and transplantations of the extensor longus hallucis to the head of the first metatarsal.

In the worst cases, or even in children as young as 3 years where there is difficulty in regular visits, a cuneiform tarsectomy with the base of the osseous wedge on the supero-external aspect of the mid-tarsus answers well. The foot is fixed in plaster-of-Paris for two to three months.

Astragalectomy has its supporters, while Openshaw advocates removal of the fore process of the os calcis.

In all these cases there is need of subsequent treatment which is the more prolonged the worse the condition is when the infant is first seen.

Finally, in adults with gross deformity, numerous callosities and impaired circulation, the kindest measure of relief is likely to be Syme's amputation as advised by Rankin.

Among the many valued collaborators in this work I owe a special debt of gratitude to my clinical assistants, Drs. C. I. Ham and W. O. H. Evans, and to the surgical out-patient nurse at the Bristol Children's Hospital for her unfailing devotion.

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Clinical and Laboratory Notes.

A CASE OF INFECTION OF THE MENINGES AND BLOOD STREAM BY *BACILLUS MUCOSUS CAPSULATUS*.

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AND
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THE following case has come under our observation.

In November 1923, a man, aged 22, was admitted to the London Hospital having had a discharge from the right ear for eight days. The right tympanic membrane was red and showed a central perforation. An incomplete mastoidectomy was performed, the sinus and dura mater not being exposed, and the patient appeared to make a good recovery.

In July, 1927, he was readmitted to the hospital and stated that six months previously the discharge had recurred. There was tenderness on pressure over the scar of the previous operation. A complete mastoidectomy was performed, the dura being exposed but not the sinus. The patient complained of giddiness for a few days following the operation, but made an uninterrupted recovery. On leaving the hospital he went to a convalescent home and, on returning home, developed a severe cold in the head.

On Sept. 26th, 1927, he was readmitted to hospital with a complaint that for 14 days he had suffered from severe headache and intense pain at the back of the neck. On admission his temperature was 103° F., and he had a rigor in which it rose to 104·5°. He was drowsy and complained of severe headache. There was marked rigidity of the posterior cervical muscles and Kernig's sign was positive. There was slight bilateral papilloedema. The pupils, ocular movements, and cranial nerves were normal. As far as could be judged there was no loss of voluntary power. The tendon reflexes were all extremely sluggish and the plantar responses were flexor. There was a mucopurulent nasal discharge. On lumbar puncture the cerebro-spinal fluid was found to be turbid and under greatly increased pressure. The temperature remained between 103° and 104·5°; the pulse 100 to 120, and the respirations 30. The patient was removed from hospital on the fifth day by his friends, and died two days later.

Ten c.cm. of cerebro-spinal fluid was removed for examination. The fluid was cloudy and formed a large cobweb on standing. Films showed pus with numerous Gram-negative bacilli. resembling *Bacillus coli communis* in appearance, and showing no evidence of capsules. Cultures in liquid media showed a diffuse growth, and on solid media large sticky colonies. The organism, a non-motile Gram-negative bacillus, formed acid but no gas in dextrose, mannite, and lactose, and failed to ferment inulin and dulcite. Milk was acidified but not clotted. Gelatin was not liquefied. As a test for virulence 1 c.cm. of a 24-hour broth culture was injected into the peritoneal cavity of a guinea-pig which died three days later. General fibrino-purulent peritonitis was found at post-mortem, and the organism was identified in films and recovered in culture from the peritoneal exudate and from the heart's blood. The films gave definite evidence of a large capsule surrounding the organism.

A blood culture taken from the patient on the same day as the spinal fluid yielded a bacillus apparently identical with that found in the spinal fluid.

It seems justifiable to use the name of *B. mucosus capsulatus* in describing this organism. The bacillus appears to be closely allied to Friedländer's pneumobacillus, the chief cultural distinction being the fermentation of carbohydrate without gas formation in the case of *B. mucosus*. The organism belongs to a group, the members of which show very varying degrees of pathogenicity. General infections, with meningeal involvement, by bacilli of the Friedländer type are occasionally met with, but a mucoid bacillus of these cultural characters has not previously been isolated in these laboratories, either from the blood or the spinal fluid. A further point of interest in this case is the apparent recovery after operation, followed some six weeks later by the development of an infection which proved fatal.

A NOTE ON TWO SIMPLE TESTS FOR IMPURITIES IN ANÆSTHETIC ETHER.

BY EDWIN B. ROBINSON, M.SC. MANCH.,
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IN recording some abnormal results obtained when using certain samples of ether for anæsthetic purposes (THE LANCET, 1927, i., 1117), Dr. S. R. Wilson concluded that the abnormalities were due to the presence of impurities—probably acetaldehyde and "peroxides" in the ether. He based his conclusion partly on reports on chemical tests carried out in the chemistry department of the University of Manchester. These reports indicated, as Dr. Wilson states, a close relationship between the presence of impurities in the ether and the previously observed undesirable clinical properties of the samples submitted. The writer, as Prof. A. Lapworth's assistant, did the actual chemical tests on Dr. Wilson's samples. It is thought worth while to describe two of them in detail, as they are easy to carry out and may prove useful to anæsthetists. Positive results obtained on applying these tests to samples of ether will at least give warning that the samples are to be suspected.

The two tests advocated for rapid and simple use were first described by W. Wobbe,[1] but neither are given by the British or United States Pharmacopœias.

Description of Tests.

Test A.—The test solution consists of an alkaline-ammoniacal solution of silver nitrate. Unfortunately, as usually made, the solution is very unstable, and in the course of one or two days begins to decompose with the formation of a black precipitate. On account of this it is advisable to keep the three constituents of the test solution in separate bottles and mix them in the required proportions immediately before use. This is best done as follows:—

Silver nitrate (24·0 g.) is dissolved in water (60 mils.) and the clear solution kept in an amber-coloured, glass-stoppered bottle (*solution 1*).

Aqueous ammonia of specific gravity 0·923 is made by diluting 50 mils. of conc. aqueous ammonia (sp. gr. 0·88) to 86 mils. The solution is kept in an ordinary stoppered bottle (*solution 2*).

Pure caustic soda sticks (30·0 g.) are dissolved in distilled water (70 mils.) and the solution kept in a bottle provided with a tightly-fitting rubber stopper (*solution 3*).

The test solution is made by mixing together 8·6 mils. of solution 1, 13 mils. of solution 2, and 3 mils. of solution 3.

The ether is tested by adding 10 mils. of the sample to 2·5 mils. of the test solution contained in a clean test-tube. If more than minute traces of aldehyde are present a black ring will appear almost immediately at the interface of the two liquids, and on shaking a black precipitate will form in the aqueous layer. On standing, a silver mirror is sometimes formed. If the quantity of aldehyde present is negligible no precipitate will form, even after standing for several hours; a brownish coloration may be formed, but this may be neglected.

Test B.—The test solution consists of a mixture of equal volumes of 50 per cent. potassium iodide solution (*solution 4*) and 1 per cent. phenolphthalein solution (*solution 5*). These solutions should also be kept in separate bottles. To test for peroxides, solution 4 (1·25 mils.) is mixed with solution 5 (1·25 mils.) in a clean test-tube and 10 mils. of ether added. On shaking for a short time (30 secs.–2 mins.) a red colour becomes apparent if the ether contains an appreciable quantity of peroxides.

Note.—Both in preparation of the solutions and the carrying out of all the tests, it is essential that clean apparatus should be used and care taken to conform rigidly to the quantities given.

Discussion.

In Dr. Wilson's paper mention is made of G. Middleton's "peroxide" test which is used by the British Drug Houses.[2] This test is very trustworthy in the hands of a worker who has had considerable experience in chemical manipulation and has at his disposal the necessary time and reagents to carry it out, but most anæsthetists would find it impracticable for general use. On the other hand, both the tests put forward by Wobbe are rapidly carried out on small quantities of ether and the reagents required are in general use amongst anæsthetists and most medical practitioners.

The two tests differ in sensitiveness, A being more sensitive than B. Test A will detect very small concentrations of acetaldehyde in ether and, very probably, *the reagent* will also be acted on by peroxides and many other bodies. That it is possible, however, to prepare and store ether which does not respond to this test has been shown by testing certain samples of commercial anæsthetic ether.

Statements have been made that concentrations of acetaldehyde less than 0·5 per cent. have no deleterious effects during anæsthesia. Middleton,[2] however, has shown that the rate of formation of peroxides in ether is doubled in the presence of acetaldehyde. Thus a sample of ether containing less than 0·5 per cent. of acetaldehyde when bottled and sealed, may even though great precautions are taken in storing become much more highly contaminated in course of time. The observations recorded by Dr. Wilson show that the peroxide and aldehyde content of ether is rapidly increased when oxygen is bubbled through it in an ordinary Shipway apparatus. It is, therefore essential that ether which is to be used for anæsthetic purposes should be tested in some way immediately before use.

Test B, for peroxides, does not respond to a solution of pure acetaldehyde in ether. Hence it is not sufficient to apply test B alone to samples of ether intended for anæsthetic purposes. The test is not so sensitive as that described by Middleton, but is much simpler to carry out. In the present state of knowledge samples of anæsthetic ether which contain sufficient peroxides to respond to test B should be viewed with great suspicion.

In conclusion, the writer wishes to acknowledge his indebtedness to Prof. A. Lapworth, F.R.S., for his help and criticism during the time the work was proceeding and for facilities enabling it to be carried out.

[1] Chemisches Centralblatt, 1903, lxxiv., 458.

[2] Pharmaceut. Jour., 1924, cxiii., 98.

AN UNUSUAL CASE OF APPENDICITIS.

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THE following case came under my care at the hospital on Feb. 14th of this year.

A farm labourer, aged 26, complained of generalised abdominal pain. He had not felt well since Christmas and had had three attacks of colicky pain across lower abdomen at intervals of a few days, each lasting for three days, but not severe enough to stop him working. Three days before admission he had vomited once. The bowels had been open regularly except on the day of admission.

On examination the temperature was 102·2° F., the pulse-rate 106, and the respiration-rate 28. The tongue was coated and dry. He had generalised abdominal tenderness, more marked in the right iliac fossa. There was rigidity of the right rectus, and hyperæsthesia over Poupart's ligament. Per rectum nothing abnormal was detected. Under an anæsthetic a small, hard, movable lump was palpated 1½ in. mesial to the anterior superior iliac spine. The abdomen was opened by Battle's incision, and the appendix was found completely enveloped in a sheath of omentum, which bled freely, but was returned to the abdomen after the insertion of hæmostatic sutures. The appendix was acutely inflamed and presented a drumstick appearance caused by a spherical swelling ¾ in. from the cæcal end. The appendix was removed by the usual method, the stump being buried and the abdomen closed without drainage. The patient made an uninterrupted recovery.

The appendix was found to contain an intact barcelona nut, of full size, and showing indentations caused by teeth. The patient denied having eaten any nuts since Christmas.

Medical Societies.

HARVEIAN SOCIETY OF LONDON.

THE TREATMENT OF ULCERATIVE COLITIS.

A MEETING of this Society was held on April 19th, with the President, Dr. HERBERT FRENCH, in the chair.

A discussion on the Treatment of Ulcerative Colitis was opened by Dr. H. LETHEBY TIDY from

The Medical Aspect.

He said that colitis was a condition in which there was diarrhœa and the stools contained blood and mucus. This might occur without ulceration, as in bacillary dysentery, or ulceration might supervene without any change in the symptoms. It was, however, practically certain to be present in a patient who had suffered from these symptoms for any length of time. The onset might be dramatically sudden, but more often, in civil practice, the doctor saw the patient after his condition had drifted on for a few months or, occasionally, for a few days or weeks. The chronic case might have acute exacerbations.

Certain *general principles of treatment* must be accepted whatever other methods were adopted. First and foremost, the patient must be kept warm. Warmth checked peristalsis and had certain general effects which made it of the utmost importance. In Dr. Tidy's experience the patient with the warm moist skin would recover; it had rightly been said, "the dysenteric who sweats never dies." There was forty to fifty times the difference in mortality between the warm and the cold patient. Mere confinement to bed was not enough; the extremities must be wrapped in wool to wrists and ankles, even in a tropical climate. The second cardinal principle was that the patient must be given fluid—not in large draughts, but as a medicine. During the acute stage he should take 1 or 2 oz. every 20 minutes while awake, with a total of 4 or 5 pints in the 24 hours.

The alternatives of treatment were by injection, by the mouth, by vaccines, and by serum. Dr. Tidy had found drugs by the mouth of little value, with the exception of aromatic sulphuric acid and charcoal. It was utterly wrong to give morphia in any circumstances whatsoever. An injection would check the diarrhœa and was therefore very hard to resist, but it must not be given. It was doubtful, too, whether the drug was ever justified by the mouth, even in the form of such preparations as chlorodyne. Cases that would clear up like an ordinary diarrhœa would clear up just as well without morphia, and severe cases ought not to have it. Dr. Tidy could not persuade himself that any valuable results had followed the use of vaccines. Serum was of enormous value for a very short time after the onset of bacillary dysentery, but not in the later stages. It was therefore not indicated in the ordinary chronic colitis of civilian practice. There were three ways of treating the rectum—by starch and opium enemas, by colonic washes, and by medicated enemas. The mortality would be halved at once if medicated enemas could be abolished; they could do very grave injury and must be withheld to the very end of the treatment.

The first measure should be the starch and opium enema, with a maximum volume of 4 oz.—3 oz. for the average man and 2 oz. for a woman—and with a dose of ½ to 2 drachms of the tincture of opium. The fluid should be administered through a soft rubber No. 10 catheter and funnel, with 6 to 8 in. of pressure. Its effect lasted about 12 hours, and the enema should therefore first be given at night, to ensure rest. It must not be given more than five times a week and never on more than three consecutive days. If the anus and rectum were once allowed to get irritated they would reject the enema and the whole treatment would be put back for a fortnight. If after three weeks of this treatment the number of stools had been reduced to half, the practitioner might count himself lucky, and might then pass to the second stage of colonic washes. These might consist of any bland fluid—for instance, a drachm to the pint of sodium chloride or 2 drachms to the pint of sodium bicarbonate. The wash should be given in the same way as the enema with a pressure of 12 to 18 in.—never more than 2 ft. Two pints of fluid should be used and should never take less than half an hour to administer. The patient should lie on alternate sides during the administration. There was no doubt that the fluid reached the cæcum when given in this way. Very few patients would stand more than three washes a week, and they should never be given them on more than two consecutive days, with a maximum of four one week and three the next. It would often be necessary to return for a time to the starch and opium enema to keep down the number of stools. In contradiction to the advice of the text-books, these two forms of treatment must be continued for six or eight months before medicated enemas were started. The medicaments irritated the colon and must be the final curative stage of treatment, which was not reached until there were consistently fewer than five motions a day. For a medicated enema albargin was the best preparation in a dose of ½ drachm to 30 oz. of saline or tap-water; 25 oz. should be given very slowly after a colonic wash, of which at least half must have been returned. The best routine was to give a wash between 6 and 9 A.M. and the enema about 10 A.M. The absolute maximum was six in a fortnight, followed by a week's rest. Any attempt to rush the treatment defeated its own object, and practitioner and patient alike must realise that the whole treatment was a matter of many months, usually eight or twelve. No colon which had been through this trouble was going to be "cured," any more than an amputated leg could be "cured," but most patients at the end of the course passed no more than two or three motions a day and could live active lives. "Cure" might be interpreted as not more than three or four fairly formed motions daily. There was no justification

whatever for the appalling mortalities recorded. Errors were due to reliance on medicated enemas and drugs by the mouth and to haste.

Ætiology and Pathology.

Mr. LIONEL NORBURY said that the dysentery bacillus had been incriminated as the cause of ulcerative colitis, but against this was the absence of history of infection, of infectivity, and of the bacillus in the stools, as well as the fact that the serum of patients did not agglutinate the Shiga bacillus, nor did the patient benefit from antidysenteric serum. Many different organisms had been isolated. Constitutional diseases, such as chronic nephritis, might be complicated by ulcerative colitis. In several cases achlorhydria has been a feature, and these patients had improved on a course of hydrochloric acid. Shortage of calcium in the blood and of vitamins might be predisposing causes. The pathology varied from œdematous areas with vascular granular patches in the colon to small punched-out ulcers, which might run together and form large areas. Œdematous masses of mucous membrane might be isolated and simulate polypi. The ulcers were not undermined and were usually superficial, so that little scar tissue resulted. Nevertheless, they might spread to the peritoneum, producing fistulæ and perforations. In many cases there was no characteristic ulceration, but only raw bleeding areas denuded of epithelium. The disease was one of early adult life and the sexes were about equally affected, though at St. Mark's females had seemed to preponderate. Death resulted from hæmorrhage, exhaustion, perforation, or peritonitis. The diagnosis was made on the symptoms and on the appearances seen through the sigmoidoscope.

The Surgical Treatment.

The treatment, after rest and warmth and suitable measures directed to the cause, if this could be ascertained, consisted of removal of septic foci and a liberal diet, including vitamins, fats, and fruits. Drugs for alleviation of symptoms included zinc oxide pills, 3 grains thrice daily; 15 minims of castor oil in gelatin capsules, kaolin, bismuth, opium, kerol, dimol, and animal charcoal. Vaccines might be made from organisms taken from the granular surfaces (Dr. Cuthbert Dukes had devised a special sucker for this purpose) or from the urine. Lavage should be administered in the knee-elbow position, or with the patient on alternate sides and the pelvis raised. Hypertonic saline, silver, albargin, sanitas, or kaolin could be used. Blood transfusion was useful for severe cases. Zinc ionisation gave good results with some patients, although the sigmoidoscope showed that no real cure had been brought about. If the case did not readily respond to ordinary methods appendicostomy should be performed, as it was obvious that better irrigation could be obtained from above than from below. If for any reason appendicostomy was unsuitable a valvular cæcostomy might replace it. Two to four quarts of fluid should be washed through the opening twice daily, and very acute cases might be treated with continuous irrigation. To rest the colon a right colostomy or cæcostomy was necessary, but the fluid fæces at this level made the nursing difficult and stenosis was very likely to follow. In these respects a right lumbar colostomy was better. Excision was usually impracticable because of the debilitated condition of the patient. While the symptoms might improve considerably, the sigmoidoscope usually showed that the condition was little altered. Ulcerative colitis was one of the most serious conditions of intestinal disorder and one of the most difficult to cure, requiring several years of regular irrigation through an appendicostomy.

Bacillary Ætiology.

Dr. BELLINGHAM SMITH argued that the condition was an endemic dysentery, of which we had not yet recognised the causative organism. In a number of his cases an unknown non-lactose-fermenting bacillus had been isolated. It was well known that the Shiga bacillus was obtainable from all cases of dysentery in the first 72 hours, but the number of positive results rapidly fell. Since few cases of ulcerative colitis were seen early, the organism was not likely to be found often. He agreed with previous speakers about drug and local treatment, but thought that sodium sulphaté had value in the early stages, combined with spirit of aromatic ammonia and ginger. Adrenalin added to the opium enema was useful. The condition was practically incurable and could only be relieved. Of his 46 cases 24 had died, 13 under medical and 11 under surgical treatment; 16 had improved, and three had much improved.

Mr. C. P. G. WAKELEY pointed out that perforation was nearly always in the cæcum or right colon. Treatment should be based on sigmoidoscopic examination. If the ulcers were shallow and the mucous membrane œdematous, medical treatment would give the best results, but it could do no good if the ulcers were deep and going into the wall of the bowel. Then cæcostomy or right colostomy would give great benefit. After six months of medicated enemas the patient was a miserable creature with tenesmus and a patulous anus, and would get great relief from cæcostomy. Appendicostomy did not give very good results. He preferred hypertonic saline at 100° F. for irrigation from above. The condition was not so incurable as was made out if early diagnosis and treatment were instituted by the use of the sigmoidoscope.

Sir JOHN BROADBENT supported the bacillary ætiology, quoting recent work at the Mayo Clinic, where a Gram-positive lancet-shaped diplococcus had been isolated and had given satisfactory experimental results. Vaccines of this organism had given 60 per cent. of recoveries. He had seen cases which had improved remarkably and thought the claim worth investigation.

The PRESIDENT described two cases which he had hoped to show. Both had been in an appalling state after years of medical treatment; both had recovered after colectomy and resumed active life. The only good results he had known had been from colectomy, but surgeons were loth to perform it and patients to undergo it. There were probably many different causes of the condition, and in the later stages it could not matter what the original cause had been. Cure meant getting the patient into such a state that he no longer needed medical attention. He had never seen cure after any kind of treatment in a case of more than six months' standing. Any treatment might give relief, but relapse followed. It was remarkable that the condition never appeared anywhere but in the colon.

Sir WILLIAM WILLCOX said that many cases were hopeless from the first. Post-mortem examination showed that the condition was very like bacillary dysentery, and that it might spread up the first few inches of the small intestine. He agreed that the original cause was a bacillus, but this was swamped by secondary infections in a few days. Treatment must depend on the stage of the disease. Hypertonic intravenous saline was useful for those cases where the diarrhœa was choleraic.

Dr. TIDY, in reply, said that the vast bulk of cases were no doubt due to some organism, and he was sure that the Mayo coccus was the "enterococcus" of Sir Thomas Houston. Nevertheless ulcerative colitis might be due to many different things.

Mr. NORBURY also briefly replied.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

AT a meeting of this Society held at the Guildhall, Bath, on April 20th, the acting President, Dr. E. H. SNELL being in the chair, a discussion took place on the

CAUSES OF THE DECLINE IN TUBERCULOSIS MORTALITY.

Sir ROBERT PHILIP (Professor of Tuberculosis, Edinburgh University), in the opening paper, traced

the gradual growth of the fight against tuberculosis since the first dispensaries were started in the last century. Thus had arisen a more searching investigation of the early signs of infection and a recognition of tuberculosis as a "household disease." The examination of contacts had shown how frequently the disease was contracted in childhood and how much resistance varied. Tuberculosis schemes had been gradually evolved and improved as time went on. In Edinburgh the ordinary medical graduate, as well as the D.P.H. student, received special courses in tuberculosis work. The paper was illustrated by charts showing the change in the tuberculosis mortality since 1871 in Scotland, England and Wales, and Ireland respectively, in the whole population, in each sex, and at each age-period. Sir Robert Philip claimed that the decline in Scotland had been steady and uninterrupted. The drop in mortality was greater than that in the death-rate as a whole. The decline had occurred in other countries and had been greatest where the effort was greatest. In Paris and Vienna there was a marked improvement and in the arrondissements of France the result varied with the activities brought into play. Denmark had the lowest rate in Europe, and the claim was made that this was due to the special efforts made. In New York effort had produced a great decline and the urban districts in that State were now better than the rural. Similarly, the tuberculosis rate in the Highlands of Scotland was high as compared with the Lowlands. Numerous factors, of course, had been at work—sanitary improvements during the last 80 years; better education; better housing and working conditions; the effect of the Health Insurance Act, of medical inspection of school-children, of maternity and child welfare work; and of a coördinated health service. Everything that reduced the general death-rate also reduced the tuberculosis rate. He claimed, on the other hand, that the work done to attack the special problem had been of great value and had, in addition, aided progress in general public health matters, and led to improved environment as well as limitation of infection. Early discovery of cases and early treatment were very important. His experience with cattle and the effort to secure tubercle-free herds and open-air treatment for cattle was similar. For man they needed both exclusion of infection and the building up of resistance. They must be patient in appraising and not expect quick results. There had been much saving of life in childhood and among young adults.

Dr. W. M. WILLOUGHBY (M.O.H., Port of London) made an interesting comparison between efforts made to produce a wheat immune to rust, and what had been taking place in our population with regard to tuberculosis. Urbanisation had caused tuberculosis to be rife, and there had been at first a rapid sweeping off of the susceptibles. The rate of decline of the tuberculosis death-rate was now slowing down because susceptibles were less numerous and immunity was increasing. Now, when the endemic prevalence was tailing off, was the time for increased preventive effort. The decline had been temporarily retarded by the want of fat during the war. Resistance to tubercle was quite a special thing. It was perhaps intrinsically greater in the female sex and was also related to the constitutional liking for and ability to digest fat. It was, in fact, hereditary.

Dr. E. L. COLLIS (Mansell Talbot Professor of Preventive Medicine, University of Wales) said that of the three types of tuberculosis the decline in mortality had been most in the infant, less in the early adult, and least in the middle-life type. He inquired: Was any immunity acquired by fighting and defeating the tubercle bacillus? He suggested that the young adult curve was not lessened by infant immunity and that phthisis at ages 15–30 was largely a problem of nutrition. Malnutrition really broke down any immunity acquired in infancy. Tuberculosis favoured by alcoholism was evident chiefly in early middle life. In several occupations the prevalence of tuberculosis was chiefly a matter of opportunities for infection—e.g., printers, tailors, and bootmakers. The printing trade was improving. In such trades the exclusion of the infectious worker was the important thing. In the late middle-life type silica dust and the wear and tear of life wore down the immunity. Further reduction was to be expected in the late phthisis. In the early (15–30) type the reduction was due chiefly to the lessening of infection, to the increase in real wages, and to less wear and tear; and a still better result was to be expected from further control of infection and, very especially, from improvement in dietaries. We must control and segregate the infectious cases. The death-rate from phthisis at ages 45–55 in males had only fallen pari passu with the general death-rate. Amongst other illustrative charts Dr. Collis showed one which demonstrated the close correspondence between the fall in the phthisis rate and the rise in real wages. The rise in the female rate during the war was only in the early adult age-period and was due to nutritional causes.

Dr. M. GREENWOOD (Professor of Epidemiology and Vital Statistics, University of London) pointed out that the fall in the Scottish phthisis death-rate was not a straight line, but had shown a distinct slowing off in recent years. Karl Pearson had shown that the slowing off of the decline since 1919 had coincided with the period of greatest antituberculosis activity. Dr. Greenwood expressed his agreement with the views of both Dr. Collis and Dr. Willoughby, and went on to refer to the war experiences of all countries which emphasised the importance of the nutritional factor. He mentioned the experience of mental hospitals which ordinarily had a phthisis death-rate eight times the normal. This ordinary excess became an extraordinary excess during the period of war rationing and had now become ordinary again. He considered that diet (whether it was a question of vitamins, fats, or calories) was of the highest importance.

After the four invited speeches, Dr. H. SCURFIELD (M.O.H., Sheffield, 1904–21) distributed the following chart illustrative of the improvement in the phthisis mortality-rate among the Sheffield grinders:—

City of Sheffield: Mortality of Grinders.

	Quenquennia.	
	1909–13.	1923–27.
Deaths, all causes	115	91
Deaths, respiratory tuberculosis	58	33
Percentage	51	37
Average age at death	49	53

He expressed the opinion that the two main factors at work in contributing to this result were the exclusion of open cases of tuberculosis from the grinding "hulls" by the activities of the tuberculosis dispensary and the introduction of improved regulations for preventing the inhalation of the sandstone dust. He further thought it was a pity that anthracosis and siderosis were still retained in the text-books as names of dust diseases of the lungs, as there was no evidence that either coal dust or iron dust per se produced diseases of the lungs, and coal dust even seemed to be an actual preventive of pulmonary tuberculosis.

Time did not permit of general discussion.

OPHTHALMOLOGICAL SOCIETY.

ANNUAL CONGRESS.

THE Annual Congress of the Ophthalmological Society of the United Kingdom was held at the house of the Royal Society of Medicine and the clinical meeting at Moorfields Eye Hospital, City-road. The chair was occupied by Mr. C. HOWARD USHER (Aberdeen), the President, who gave an address on

Relationships between Animals' Eyes and Human Ophthalmology.

It was significant, he said, that at the present time there was no original work on diseases of the eyes in animals by a British author, with the exception

of Wardrop's "Diseases of the Eye of the Horse," 1819. Yet ophthalmic surgery was associated in several ways with the eyes of animals, and the eye of the pig was used for teaching purposes; the transplantation of cornea, or substitution of clear cornea from a rabbit's eye for an opaque portion of human cornea, was an instance of the direct use of animals' eyes for human surgery. He referred to the studies on albinism in man which were conducted by Karl Pearson and Nettleship, with whom the speaker was associated. Since opportunities of examining human albinos were very limited, albinotic eyes had been examined in the dog, horse, rabbit, guinea-pig, mouse, bird, &c. Only two birds among those examined were found to have eyes completely devoid of pigment; one a blackbird whose plumage was all white, the other a greenfinch which had patches of canary yellow on its white plumage. A bird with only pure white feathers might have a red pupil and no ocular pigment, or a red pupil and only a small quantity of ocular pigment. It seemed strange that some of the birds' eyes should contain pigment in the pecten when there was no pigment in any other mesoblastic structure of the eye, as the speaker believed that the pecten was wholly derived from mesoblast. But Bernd found an ectodermal origin, and the major portion of the embryonic pecten on the seventh day was of ectodermal origin, the mesoderm forming a relatively inconspicuous part of it. Miss I. Mann and others had confirmed the two-fold origin of the pecten.

Mr. Usher then went on to refer to the iris colour in winter-white animals, and asked whether there was a seasonal variation in the colour of the iris of animals which changed the colour of their summer coats to white in winter. A number of observations seemed to show that the iris of the mountain hare had less pigment in winter than in summer, though it was difficult to be certain, as this iris had no constant shade of brown in a number of the animals examined. Other series of animals examined did not show seasonal colour changes in the iris. Mr. Usher went on to discuss the help that the study of animals' eyes could afford in regard to heredity. Human pedigrees were much more difficult to work out than were the pedigrees of animals; also the control of matings and the difficulty of obtaining post-mortem examinations were obstacles on the human side. The work now being carried on in this comparative way was likely to be of much value, and to serve a number of useful purposes.

Mr. E. TREACHER COLLINS read a paper entitled

Notes on the Natural History of Retinal Neoplasms.

The conclusions at which he had arrived, on the very elaborate data which he laid before the meeting, were briefly as follows:—

1. At Moorfields Ophthalmic Hospital there had been no evidence, during the past 53 years, of any increase in the number of cases of retinal glioma. 2. Retinal glioma was limited to the very early years of life, as it arose from cells which became highly specialised and soon lost all the capacity they might have had for reproduction. A further point was that this tissue did not contain "mother cells." 3. Cells in metastatic growths of retinal glioma sometimes underwent an increase in size and an alteration in shape, due to a change in their environment, the chief alteration consisting in an increased blood-supply, the blood-vessels in the primary growth being only terminal vessels. 4. The uveal tract when invaded by retinal glioma reacted by forming fibrous tissue, contraction of which might cause shrinkage of the growth. When the ciliary body was invaded the supply of intra-ocular nutrient fluid was cut off, and the loss of this, with the contraction of the newly-formed fibrous tissue, caused the eyeball to shrink. 5. Retinal gliomata were growths of the neural epiblast, and in their mode of dissemination they resembled carcinomata rather than sarcomata. It was more frequent for them to spread by centrifugal permeation along lymphatic spaces than as emboli in vascular channels. For this reason secondary growths were more frequent in the vicinity of the eye than in the internal organs. 6. The blood-vessels of the retina, its only mesoblastic constituent, might certainly be the seat of origin of capillary angiomata, possibly also of angiosarcomata. It was necessary, however, to collect more evidence concerning primary retinal malignant growths commencing after middle life before this could be regarded as proved.

Lieut.-Colonel H. SMITH said it had frequently been asserted that malignant disease was not as frequent among vegetarian people in the East as among meat-eating Westerns, but as one who had had a large experience in both regions he could assert that this was untrue. Many of those who made such statements had only a limited experience in one civil hospital.

Mr. COLLINS, in reply, said glioma could not be attributed to diet, as two-thirds of the cases started before birth.

Lieut.-Colonel SMITH read a paper on the

Early State of Cataract and its Diagnosis.

He said that in Europe cataract development in any individual was spread over years, but in India it matured much more rapidly. He did not think any ophthalmologist could say with certainty what was the cause of senile cataract. To explain cases in India, the glare of the sun had been advanced, but in Burma, where the sun's glare was not less, cataract was not very prevalent. Some said the cause was starvation, but in Punjab where it was common the people were not on the verge of starvation. The idea probably arose from the fact that the Indian's religion precluded the eating of much meat. The least healthy people in India were the overfed denizens of towns, and they also were the shortest lived. In India there was much diabetes after middle life, but it did not seem to exert much influence on the lens. With regard to the probable proximal cause of cataract, the lens had no blood or lymph cells, and so had to live on a specially metabolised pabulum, which probably reached it through the aqueous, which was no doubt also the channel of exit for waste products. In 1910 he had a patient with a thin nebula on each cornea; she had loss of transparency of the lenses and said her vision had become reduced before the nebulæ came; distant vision was less than half normal. He gave her a subconjunctival injection of cyanide of mercury in both eyes. In a month the distant vision was as good as 35 years ago. Since then he had used the treatment in many cases. He did not try it in cases which had definite central dead tissue. He found that in almost every case with vision 6/12 or better the intense hyperæmia re-established vision at 6/6 in three weeks. Cases with a distant vision of 6/15 recovered vision less often, and when vision was less than 6/15, though recovery of vision was great, it was only temporary. He hoped that practitioners would in the future more frequently realise that failing distant vision in people over 50 years of age, with no other complication, was an indication of the early stage of cataract, that at this stage it was curable, and that such cases should be sent to be dealt with by the ophthalmologist. Until, however, the medical schools took up the question the position would probably be little improved.

Mr. A. F. MACCALLAN said he did not think any drug influenced any lenticular opacity. He felt certain that focal sepsis played an important, perhaps the chief, part in the causation of cataract, hence instead of injecting drugs, the sepsis should be sought for and dealt with.

Sir JOHN PARSONS spoke of the danger of injecting cyanide of mercury. He thought a more exhaustive investigation of diet in these cases might usefully be carried out. The greatest advance on the subject of the chemistry of the lens was that made by the work of Miss Dorothy Adams, who found in it glutathione. Two factors were probably concerned in the causation of cataract, one of which was very likely to be light, but this did not act unless the other factor was present too.

Mr. E. WOLFF read a paper by himself and Mr. F. DAVIES on Fragmentation of the Retinal Blood Stream.

(To be continued.)

Reviews and Notices of Books.

BRONCHOSCOPY AND ESOPHAGOSCOPY.

A Manual of Peroral Endoscopy and Laryngeal Surgery. Second edition. By CHEVALIER JACKSON, M.D., Sc.D., LL.D., F.A.C.S., Professor of Bronchoscopy and Esophagoscopy, Graduate School of Medicine, University of Pennsylvania. London and Philadelphia: W. B. Saunders Company. 1927. Pp. 457. 36*s*.

THE first edition of this notable book was reviewed in our columns five years ago. The present edition follows the same lines, but has been enlarged and the excellent series of illustrations has received many welcome additions. In the first chapter the instrumentarium is described; of endoscopes, only those with distal illumination are used or mentioned. Many ingenious forceps for particular purposes are shown, such as those designed to hold staples, to bend wires, and to close open safety-pins; of especial interest are the rotation-forceps furnished with points which permit version of a foreign body into position for safe extraction, and the Tucker tack- and pin-forceps, which throws the shaft of the pin into line with the axis of the endoscope. In Prof. Jackson's Bronchoscopic Clinic general anæsthesia is never used for purely endoscopic procedures, but he concedes that it is perhaps safer for the beginner in his early cases of œsophagoscopy to have the patient relaxed by an ether anæsthesia; local anæsthesia is needless for œsophagoscopy, and if used at all should be limited to the laryngopharynx, for the œsophagus is without sensation. He lays down two postulates: that cocaine should not be used on children under 10 years of age, and that a dyspnœic patient should never be given a general anæsthetic; and he adds a third, that total abolition of the cough-reflex, either by general or local anæsthesia, should be for short periods only. In his clinic children receive no local nor general anæsthetic, nor sedative, for laryngoscopy or œsophagoscopy, but older children have a preliminary dose of morphia or sodium bromide before bronchoscopy. For laryngeal operations and for bronchoscopy, adults are given a preliminary injection of morphia and atropine, or of morphia and scopolamine, and 10 per cent. cocaine is applied to both superior laryngeal nerves on cotton-wool swabs; later, 20 per cent. cocaine may be applied through the endoscope if necessary.

It is well to remember that Prof. Jackson and his colleagues have a very large experience in this work, and the advantage of a team of well-trained assistants; the laryngologist with only occasional experience in bronchoscopy can hardly expect to be able to remove a difficult foreign body from the bronchus of a frightened child without the aid of sedative or anæsthetic. In the treatment of disease of the upper air- and food-passages by endoscopy, where repeated instrumentation is required, it is an enormous advantage to acquire sufficient skill to dispense with anæsthetics; it is unfortunate that practice on dogs, recommended by Prof. Jackson, and harmless to the animals, is not permissible in this country. A large part of the book is occupied by foreign-body problems, the solutions of which are most ingenious and will be of great value to any confronted by these sometimes very difficult cases. In the treatment of disease the author is, naturally, less exact, for the subject is in its infancy; he makes the point, with which most physicians will nowadays agree, that cases of bronchiectasis should be examined endoscopically with a view to determining the cause, which may be foreign body or bronchial stenosis, and therefore amenable to local treatment; in addition, considerable benefit has resulted from endobronchial lavage and injections. He claims that many lives have been saved by bronchoscopic aspiration in cases where the bronchi are occluded by viscid or excessive secretion, a condition which he rather clumsily terms "autodrownage." The warning given that the bronchoscopist is likely to see things, metaphorically as well as actually, narrowly through a small tube, cannot of course be applied to Prof. Jackson himself, but it is natural that he should tend to an endoscopic point of view. Thus he states that a good percentage of cures have been obtained in asthma by bronchoscopic injection of cocaine and adrenalin, without considering that these drugs can be brought into contact with the bronchial mucosa by means of a good nebuliser; he mentions the use of lipiodol for pneumonography only by bronchoscopic injection, and omits the fact that a more even mapping of the bronchial tree can be obtained by the introduction of lipiodol into the larynx or through the crico-thyroid space without bronchoscopy; and, finally, he entirely ignores the removal of innocent tumours of the vocal cords by the indirect method. A short chapter on gastroscopy includes the relation of a very remarkable case in which a safety-pin impacted in the pylorus of an infant aged 11 months was removed by gastroscopy without general or local anæsthesia. The final chapters, dealing with stenosis and with tracheotomy, are not strictly relevant to the subject of endoscopy.

This book, written by an acknowledged master of his subject, will be of the greatest value and interest to all who practise peroral endoscopy.

CENTRAL NERVOUS SYSTEM.

Examination of the Central Nervous System. By DONALD CORE, M.D. Manch., F.R.C.P. Lond., Hon. Assistant Physician, Manchester Royal Infirmary. Edinburgh: E. and S. Livingstone. 1928. Pp. 248. 8*s*. 6*d*.

Dr. Donald Core's conveniently small vade-mecum is intended for the medical student who is training in neurology. That such a book is desirable or necessary is proof of the attention given in these days to the subject, now no longer relegated to the background of medicine. It covers the examination of the motor and sensory systems, the cranial nerves, speech, and the mental state of the examinee. An account of blood pressure and cerebro-spinal fluid investigation and of electrical reactions is included, yet the peripheral nervous system is ignored except for incidental allusion. There are a few diagrams, some at least of which are distinctly unimportant; for neurological diagnosis a knowledge of neuro-anatomy is essential, and some illustrations elucidating anatomical matters in routine examination would have been useful. In respect of actual technique the descriptions are sound and reliable, and appropriately concise; we have observed but a few to which minor exception might be taken. The attempts made to differentiate types of involuntary movement—e.g., "clonic muscle movements" (sic) from both "chorea" and "myoclonus"—can be carried out in theory vastly more easily than by the bedside. It is highly questionable if true flexibilitas cerea occurs in the Parkinsonian syndrome. Under supranuclear lesions of the oculomotor group no reference is made to conjugate paralysis of vertical movements; the symptom-complex of paralysis of the ocular components of the cervical sympathetic is not given in its entirety. These and other mild blemishes might with advantage be removed in another edition.

MENTAL HYGIENE.

By DANIEL WOLFORD LA RUE, Ph.D. New York: Macmillan Company. 1927. Pp. 443. 10*s*.

THIS little book is intended to appeal to pupil teachers, and aims at training them in healthy habits of mind so that they may impart these, by example even more than by precept, to their pupils. It is divided into four sections, of which the first deals with personality and the mind generally, the second with pathological manifestations, the third with special aspects of mental hygiene and social adaptation, while the fourth is concerned with child study and the application of the principles advocated in the teaching profession. The last section is by far the best, being ground upon which the author has evidently

practical knowledge; he emphasises the importance of the emotional life of the child in education, and gives sensible and valuable advice on the handling of such problems as that of the nervous, timid, irritable, or shut-in type of child. The exercises suggested are numerous and varied, well calculated to induce the pupil teacher to think out for himself the individual and collective problems likely to be met with in his work. For the English reader the book is rather like an excellent pill, its sound content spoilt by the sugar-coating of sentiment.

MOLECULAR PHYSICS

and the Electrical Theory of Matter. Fourth edition. By JAMES ARNOLD CROWTHER, M.A., Sc.D., F.Inst.P., Professor of Physics in the University of Reading. London: J. and A. Churchill. 1927. Pp. 202. 7*s.* 6*d.*

Prof. Crowther's book has now reached its fourth edition and if the author is willing to continue his work on it, so that it keeps abreast of discovery, it is safe to say that there will be many more. It is an excellent book, full of information indicating clearly where we are on sure experimental ground and where we enter the region of speculation. The author has a vigorous and attractive style, not devoid of humour. Readers who skip the mathematics will find that much remains for them.

TO-DAY AND TO-MORROW.

Cain; or the Future of Crime. By GEORGE GODWIN. London: Kegan Paul, Trench, Trübner, and Co. 1928. Pp. 108. 2*s.* 6*d.*

Hermes; or the Future of Chemistry. By T. W. JONES, F.C.S. Pp. 88. 2*s.* 6*d.* Same publisher.

WE have received two more volumes of the well-known "To-day and To-morrow" series, which have both been written under the same difficulty—namely, that no possible condensation can give any outline of the subject which would not seem to some readers incomplete, and to others unnecessarily detailed. Both authors have met the difficulty bravely.

Mr. Godwin starts unluckily by the wholesale assumption that the story of the Jukes Family as usually handed down cannot be criticised, and follows with an attempt to define criminality which he himself concludes cannot be done. All, however, will agree with him that the cure of the criminal has little direct relation to punishment, and at this point we have a valuable section on the varieties of punishment and the position of irreclaimables. The gist of his plea is that where cure is possible, a responsibility lies with society to provide the means, but that where cure is impossible, removal of the stumbling-block to racial and international progress is justified. Surely we shall advance in our ability to diagnose the two classes as separate, but while our knowledge is accumulating, the course proposed must lead to fierce discussion. Interesting sections deal with the petty and the juvenile offender and juvenile courts, and the author notes with special reprobation the leniency of magistrates towards sexual offences, and criticises the short sentence as futile to arrest crime in many circumstances where it has been employed. The little book closes with some suggestive thoughts concerning the criminal trial of the future and an outspoken summarising of the qualifications necessary to the making of a good judge, while the author provides a solution for some of the problems in the following words: "The renunciation of the desire for revenge, and with it all those barbarous crimes which to-day are done in the name of the community . . . of the soft sentiment that holds our hands from drastic remedies when drastic remedies are necessary . . . the exercise of intelligence upon the problem, that has hitherto been the preserve of the judge and the gaoler."

If Mr. Godwin had a difficult task in outlining the future of crime in a few pages, Mr. Jones had an impossible one in the attempt to do the same for chemistry in "Hermes," when we consider the range of knowledge that is implied in the title. It may be said that the range cannot possibly be greater than that of the contributors to the series who provided those brilliant essays, "Science and the Future" and "The Future of Science," but when one branch of science is in consideration, detailed information is called for, and when that branch itself makes endless ramifications, how is the amount of that detail to be defined. The author of "Hermes" tackles the situation logically, and his small book is packed with facts presented in an intelligible manner and as far as possible in an orderly sequence. The closing pages, which discuss death as a biochemical phenomenon, pay a valuable tribute to the result of the modern union between chemistry and pathology, while he prophesies, as is now becoming the habit of our philosophers, the accomplishment of some complete revolution in our treatment of disease. He finds that the establishment of the germ origin of much disease has led medicine into direct attack upon the causal entities by the introduction of various preparations, whereas the scientific method of dealing with the situation would be to assist the organism of its own accord to set its parts in order. Briefly, the problem before the biochemist, in his relation to the future of therapeutics, will be to discover the excitants that will stimulate the diseased body to produce its antitoxin when disabled by disease. Chemistry of such an order would open up an astonishing vista of possibilities to the clinician and, even if such chemistry is verily in the future, it may be pointed out that a beginning has been made.

New Inventions.

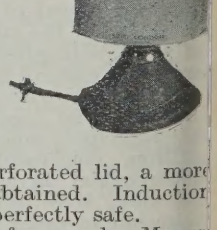
ARNBERG'S ELECTRO-MEDICAL APPARATUS

THIS apparatus, the design of a Swedish engineer, provides alternating current of what is claimed to be pure sine wave form at 20 cycles per second varying from about 5 to 25 milliampères and 20 to 70 volts. By a special device the milliampères passing through the patient do not depend on the resistance of the tissues, thus unpleasant shocks are avoided when a patient of unusually low resistance is being treated. The apparatus appears to be rather bulky considering the power supplied to the patient, and is expensive; whether the other advantages it possesses will compensate for their disadvantages can, of course, only be decided by actual use of the apparatus.

The apparatus can be inspected and tested at 20, Park-crescent, London, W., where Mr. B. Cederin will demonstrate its claims to medical practitioners or those in charge of electrical departments, by appointment between noon and 1 P.M., or between 3 P.M. and 4 P.M.

AN IMPROVED INHALER.

THE accompanying illustration shows an inhaler I have designed, which has many advantages over the usual type used for the open method. It consists of an oval metal container with a hinged perforated lid. The bottom has a funnel to which any standard face-piece may be fitted. This funnel is continued up into the inhaler and forms a trap into which any liquid anæsthetic will collect, thus preventing it from falling on the patient's face. A removable perforated tray is provided in which to place gauze or sponges; these are saturated with ether or a C and E mixture, or they may be sprayed with ethyl chloride. By moving the hand over the surface of the perforated lid, a more concentrated vapour can be obtained. Induction of anæsthesia is very rapid and perfectly safe.



This inhaler has been made for me by Messrs. A. Charles King, Ltd., of 34, Devonshire-street, W. 1.

CHARLES W. BROOK, M.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, APRIL 28, 1928.

LIVER IN PERNICIOUS ANÆMIA.

WE publish this week an article from the Edinburgh school on the treatment of pernicious anæmia with liver and liver extracts, along with a series of reports contributed at our request by a representative group of clinicians. Taken together these articles form an overwhelming mass of evidence, confirming what has been the general experience throughout the world since this method of treatment was introduced by G. R. MINOT and W. P. MURPHY, of Boston, U.S.A., that in liver, whether taken whole or in the form of some suitable extract, there exists a specific remedy for this hitherto incurable disease. The introduction of the Minot-Murphy treatment ranks as one of the most sensational episodes in the history of medicine. Since pernicious or primary anæmia was separated from the general mass of anæmias, by the work first of ADDISON and later of BIERMER and EHRLICH, it has been recognised as an entity possessing singularly few points of resemblance to any other condition. The high colour-index of the blood, the presence in it of abnormally large red cells, the great excess of bilirubin in the serum, and the absence of free hydrochloric acid from the stomach contents are cardinal factors in the diagnosis, and many attempts have been made to arrive at some comprehensive conception which would explain the association of these factors in a characteristic symptom-complex. The presence of bilirubin in the serum and of an excess of its derivatives in the urine led EHRLICH to postulate excessive hæmolysis as the underlying cause, and under his influence research was directed towards the identification of a hæmolytic agent. Abnormal fats and their split-products were implicated by one school of workers; by another, the presence in the intestinal canal of abnormal organisms, whether hæmolytic streptococci or some strain of *B. welchii*. Some workers, while conceding hæmolysis as the underlying factor in the anæmia, denied the existence of a hæmolytic toxin and attributed the anæmia to excessive blood destruction on the part of the reticulo-endothelial system. This school of thought was in turn divided against itself, some members regarding the primary disturbance as being located in the reticulo-endothelial system, while others believed the bone-marrow to be at fault in producing red cells so abnormal as to be destroyed, after liberation into the circulation, by a reticulo-endothelial system which failed to recognise abnormal red cells as better than none at all. In pursuance of these views the surgical removal of the spleen—the largest available mass of reticulo-endothelial tissue—enjoyed, for a time, a vogue in the treatment of pernicious anæmia. The results attained were on a level with those of the various other forms of treatment which preceded the Minot-Murphy epoch. All the theories of ætiology agreed in regarding excessive hæmolysis as the underlying factor of the anæmia and all the evidence seemed to point in that direction until the publication of the work of G. H. WHIPPLE. Whether it will now be necessary to jettison the hæmolytic theory altogether does not yet appear. In any case, whatever views they held of its causation, all have united in the past in regarding pernicious anæmia as a condition which progressed, with remissions, inexorably to a fatal issue. How short was the expectation of life once the disease was established is well shown in the records of patients treated at the London Hospital (see p. 872) before the days of liver. There now exists an equal unanimity that in liver we possess a remedy which will rapidly restore to normal the blood picture of the patient with pernicious anæmia, although how long the improvement will be maintained and whether or not patients will continuously respond to it is not yet known. The indications at present appear to be that the blood count will remain normal so long as liver is taken, and that should it fall it can rapidly be brought up again by increasing the dose.

Two years ago there would have been few medical men credulous enough to believe in the possibility of so simple and yet so specific a cure for a hopeless condition. To-day the consensus of opinion as to the efficacy of the treatment is complete, and there is a natural desire to put it alongside of salvarsan and insulin as a triumph of experimental medicine. The case for so doing is not quite clear. It is true that the treatment was inaugurated by MINOT and his co-workers largely as the result of experimental work upon which WHIPPLE and his associates had been engaged since 1921, but there are other tangled strands to untie. Some years ago MCCOLLUM, BENEDICT, MENDEL, and others showed that in most young animals an acute anæmia, largely due to iron deficiency, can be produced by prolonged milk-feeding. In young herbivores they found that a supply of iron did not remedy this anæmia, but cure could be brought about by administering the vitamin E normally present in vegetable food. Other workers laid stress on vitamin D; GIBSON and HOWARD (1923) wrote: "Our experiments would tend to confirm those of Whipple and his associates that in experimental hæmorrhagic anæmia in dogs, blood regeneration is hastened on a diet containing meat, liver, and other iron-rich foods." Liver was at first regarded merely as a form of meat, and it was only recognised later that meat, such as liver and kidney rich in nucleo-proteins, was more effective than simple muscle. At this stage MINOT and MURPHY applied a high-protein high-vitamin diet to the treatment of pernicious anæmia, and liver soon became recognised as much more effective than any other type of meat, though it may be mentioned that MCCANN has just reported almost as good results with kidney. So far, there seems no reason why experimental medicine should not claim a triumph. As knowledge grew, however, it became more and more doubtful if liver had a specific effect upon any type of anæmia other than pernicious. Most of the experimental work was performed on animals suffering from secondary anæmia, the result of bleeding; the treatment should then be of use in the secondary anæmias met with in medical practice. It is already obvious that any effect it may have in these is in no way comparable to that seen in anæmia of the pernicious type; so specific is the response that the condition has even been diagnosed upon the response to treatment alone. On the other hand, such effects as have been produced by liver in the treatment of secondary anæmias might have been attained by any form of high-protein diet; it is no new conception that anæmic patients require "feeding up" on "butcher's meat."

The results set out in our present issue serve to confirm the conception of Addisonian anæmia as a peculiar entity, and of liver as a unique agent for altering its course and, incidentally, for investigating its nature. Enlargement of our ideas of ætiology seems certain to result. One of the effects of giving liver is a transient but very great increase in the percentage of reticulated red cells in the circulation; that the serum bilirubin falls rapidly to normal is also obvious from the appearance of the patient The increase of the reticulocytes would at first sight seem to indicate an increased activity on the part of the bone-marrow, which is known to be abnormally active in this condition. The defect in the bone-marrow seems to be not so much a failure of blood formation as a failure to bring the red cells to maturity, the immature cells being destroyed on liberation into the blood stream. On this view liver might be regarded as what used to be known as an "alterative" so far as the bone-marrow is concerned, and the diminution of the serum bilirubin on treatment would fall in with this view. ASHBY and others have, however, offered good grounds for believing that no toxic hæmolytic agent is active in this condition, and some would go further and rule out hæmolysis altogether from the conception of pernicious anæmia. By such, the increase of the serum bilirubin and the deposition of iron in the tissues, hitherto regarded as conclusive proofs of hæmolysis, are attributed to inability on the part of the blood-forming organs to use these substances rather than as evidence of blood destruction. This point awaits further investigation, and the time has not yet come to discard the older view of pernicious anæmia as essentially a hæmolytic condition, though not of necessity due to a hæmolytic toxin.

How such a simple and specific treatment for so well-recognised a condition should have escaped detection for so long is amazing. Liver forms an article of diet among the peoples of the world; pernicious anæmia is a widespread disease; is it possible that no one before Drs. MINOT and MURPHY ever brought the patient and the cure together? Search in the backwaters of medical history may provide an answer. A few instances of the successful therapeutic use of liver in the past have come to light and probably more will be forthcoming. Thus NÄGELI reports the appearance of nucleated red cells and the improvement of the blood count in a patient who consumed enormous quantities of *Blutwurst*. NÄGELI attributed this to the blood in the sausage, but it may have been due to the liver which usually enters into the composition of this delicacy. In some parts of this country black pudding enjoys a vogue in the treatment of anæmia; presumably it was given for the sake of the blood it contained, and the tendency of late has been for its replacement by more elegant preparations of hæmoglobin. Black pudding also contains liver. From Australia comes the report we published a week or two ago of a Chinese herbalist who restored to perfect health a case of known pernicious anæmia by administering a powder consisting of the dried liver of carnivorous crows. It would be instructive to find out to what extent this preparation is used in the treatment of anæmia in the East. The relief of sprue by liver has long been recognised. It is, in fact, hardly possible to determine, as yet, whether this latest addition to specific therapy should be regarded as a triumph for the experimentalists or the empiricists. There can, however, be no doubt as to whom the credit for the inauguration of the treatment is due, and the world owes very real gratitude to WHIPPLE, MINOT, MURPHY, and their co-workers.

STERILISATION AND MENTAL DISEASE.

A GENERATION ago this subject was mentioned with bated breath. To-day it is not only openly discussed, but there have been several occasions during the past few years when it has been brought prominently before the general public at home. Their opinion has been so adverse to sterilisation that there is no immediate prospect of the passing of any legislative proposals, although such action is attracting the serious attention of public bodies and of persons interested in social reform. In matters of this kind new countries are apt to act with somewhat less deliberation than are those of older standing. So long ago as 1907 the State of Indiana passed a sterilisation law, and within 15 years 14 other of the United States had followed suit. It is not without interest to note that subsequently five of these States declared the law to be unconstitutional and invalid, another repealed it, in four others it became practically a dead letter, and in 1922 there were only two in which it was made use of to any considerable extent. The Legislature of Alberta, Canada, has just passed a Bill providing for the sterilisation of persons whom it is proposed to release from mental hospitals. This Bill applies to the recovered insane as well as to mental defectives, and is to a large extent optional. Thus, in the case of the insane the operation is not to be performed without the patient's consent. In cases where the board of examiners are of the opinion that the patient is not capable of giving such consent—and such will presumably be mental defectives—consent is required from the husband or wife, parent or guardian, or in their absence from the appropriate Minister of the Province.

The reason for this increasing attention is not far to seek. Inheritance plays an important, if not the chief, part in the causation of mental disease; there are indications that such disease is becoming more prevalent; the cost of establishing and maintaining institutions for persons so suffering has become a serious item of national expenditure. It is with the hope of solving these problems that sterilisation is advocated. At the same time the subject is clearly one which has many aspects and which presents many difficulties. There are considerations of State and religion. To what extent, for instance, is the State justified in mutilating a person who has committed no breach of the law? To what extent do religious tenets sanction or oppose such an interference with life? Although we propose to confine our consideration of the subject to its eugenic and economic aspects it is clear that both law and theology might have much to say concerning it. The advocates of sterilisation claim that it would accomplish two things. First, it would permit of many persons who are now resident in institutions being discharged and so reduce their cost to the State. Secondly, by preventing the propagation of such persons it would greatly diminish the incidence of mental disease. Hitherto the proposals in this country have been concerned almost entirely with mental defectives; the recent Canadian measure, as we have mentioned, applies not only to these, but also to the recovered insane. A little consideration will show that the two classes stand upon very different footings, and that a method might well be appropriate to the one but unsuitable to the other. Thus, in the great majority of persons who have recovered from an attack of mental disorder, there is no economic issue; the problem is purely one of eugenics. There is no question of keeping them under care, most of them are able to return, and do

return, to remunerative work. But they may, and do, beget offspring, and it is considered that such offspring are often similarly affected with mental disorder. It is probable that this view will meet with general acceptance. It also seems likely that certain dangers which it is held would attend the sterilisation of the mentally defective would not apply to the class we are now considering. But if the procedure is to be compulsory there arises the practical difficulty of deciding where to draw the line. The same hereditary influences may be at work in obsessional and anxiety states, "shell-shock," hysteria, emotional instability, and the like, as in paranoia, manic-depressive, and other forms of legal insanity. This would appear to render the selection of cases for compulsory sterilisation not only an invidious but an almost impossible task. The Canadian measure avoids this difficulty by making the operation subject to the consent of the patient, but we are not aware that any legal sanction is needed to enable a person to avoid procreation if he or she wishes to do so, either by sterilisation or otherwise.

In this country sterilisation has hitherto been proposed chiefly, if not entirely, in the case of the mentally defective, and the reasons have been economic as well as eugenic. It must be remembered, however, that mental defectives are, by statutory definition, persons incapable of managing themselves and their affairs without care, supervision or control, and although there are undoubtedly many patients who do not need institutional care it is a moot point whether the release of thousands from institutions, where for the most part they lead useful, regulated, and not unhappy lives, would be attended by any financial saving. Many authorities consider that it would not. Social workers are also practically unanimously of the opinion that there would be very considerable danger of the release of sterilised feebleminded and unstable young women resulting in an increase of promiscuous sexual intercourse with the consequent spread of venereal disease. Although there are, no doubt, individual cases in which sterilisation might be an appropriate procedure, these opinions are deserving of very serious consideration in regard to any proposals for the wholesale sterilisation of mental defectives. With regard to the eugenic aspect it is generally admitted that inheritance plays the chief part in the production of mental defect. It is also an unfortunate fact that many cases have been recorded of defective parents producing defective offspring. In spite of these facts, however, it is open to question whether the sterilisation of defectives would have any appreciable effect upon the incidence of mental deficiency. The explanation of this paradox is that although the majority of mental defectives are the progeny of neuropathic stock, the proportion who are the offspring of an actually defective parent—that is to say, of a person who would have been liable to sterilisation—is, in relation to the whole, an exceedingly small one. Within the past few years the whole question has been considered very fully and carefully by the medical committee and council of the Central Association for Mental Welfare. This association is the chief non-official body in the country dealing with defectives; it embraces practically all the leading medical and lay authorities on the subject, and during a period of ten years 34,000 cases of mental abnormality passed through its hands. The Council arrived at the conclusion that whilst sterilisation might be appropriate in certain particular cases, its general adoption would have little preventive effect, that the freedom accompanying it would be attended with positive harm to the defectives themselves, that it would not result in any financial saving—that, in short, the procedure would benefit neither the defectives nor the community. Coming from an authoritative source, these opinions cannot be lightly set aside.

ULCERATIVE COLITIS.

FACED with an acute illness in which the patient passes frequent stools containing blood and mucus, few practitioners would hesitate to diagnose dysentery, and to attribute the condition to some specific organism. The fact that bacteriologists now recognise that it may be caused by several races of bacteria, differing from Shiga's bacillus in their cultural and serological reactions, has done little to change clinical conceptions of the disease. In this country, however, most medical men have few opportunities for observing the acute stage, for although this is very common in the tropics and sub-tropics, it is rarely seen in the temperate zones except where many people are crowded together, as in armies or institutions, and the virus is introduced by a carrier. Subacute infection, on the other hand, may well be more prevalent than is generally supposed. In the first place it may be due to the *Entamœba histolytica*, which WARRINGTON YORKE and others have shown to be endemic in England, affecting up to 10 per cent. of the population. But even apart from this and other specific causes of intestinal ulceration, such as tubercle, syphilis, and gonorrhœa, there is a large group of chronic cases for which the dysentery bacilli has been held responsible. They are characterised by the presence of blood and mucus in the stools; their onset is insidious; their course, though chronic, is often interrupted by exacerbations; and they are labelled "ulcerative colitis." It was to this important group that the Harveian Society gave its attention at a meeting last week, which we report on page 857.

The belief that dysentery bacilli, especially of the Flexner type, commonly cause chronic infections of this kind was widely held in the first few years after the late war, and many physicians were led to administer antidysenteric serum in cases of ulcerative colitis. The results of this attempt at specific remedy were disappointing and its use has now been largely abandoned. Rational therapy, however, must depend upon treatment of the cause, and this failure continues to inspire fresh efforts towards the discovery of the underlying factor, bacterial or otherwise. Bacteriologists, searching in vain in ulcerative colitis for the bacilli which are readily found in acute dysentery, have described organisms allied to the common colon bacillus which they say are liable to become pathogenic, and a number of "pseudo-dysentery" bacilli with varying biochemical reactions have been brought forward as possible causes. Whilst the evidence for these is not convincing, the claims made for other intestinal inhabitants, such as the anaerobic spore-forming bacilli and the streptococci, are no more substantial. The diplococcus of Bargen, a recent claimant, which has been isolated not only from the fæces, but from material removed from the cleansed surface of ulcers through a sigmoidoscope, seems to be identical with the enterococcus; and the latter, though tenacious of life—it even stands momentary boiling—and reported periodically as a cause of disease, has no great pathogenicity. Perhaps, like so many intestinal bacteria, it is a secondary invader of damaged tissue, but its responsibility for setting up ulcerative colitis cannot yet be accepted.

These indefinite results have led to the exploration of other possibilities in the search for a primary cause. LARIMORE, for instance, regards an avitaminosis as the basis of chronic ulcerative colitis, and MCCARRISON in 1921 demonstrated injury to the intestinal mucosa in animals deprived of vitamins. That chemical substances may play a part in ulceration is well known; physicians who remember the days before the Wassermann reaction made it possible to establish the diagnosis of syphilis will recall the severe ulcerations of the colon produced by mercurial saturation of patients who suffered from obscure affections of the nervous system and other chronic diseases. It is possible, therefore, that ulcerative colitis may be caused not only by lack of vitamins, but also by chemical substances, of composition at present unknown, which damage the bowel, their lesions being infected and kept active by the otherwise harmless intestinal flora. In tropical countries the white man has learned to exercise the greatest care to avoid the use of contaminated and tainted food, for a lapse may be followed by swift and severe consequences, but in England and temperate climates a lower standard of hygiene is customary and the food often includes game that is high and milk that is stale, whilst meat by no means above suspicion is included in stews and made-up dishes. It is possible that such frequent insults to the intestinal mucous membrane set up lesions in the lower colon where the intestinal contents lodge in the intervals between defæcation and where ulcerative colitis usually begins. This is a revival of the old notion of "stercoral ulceration," modified to include chemical as well as mechanical injuries to the bowel wall from its contents.

Annotations.

"Ne quid nimis."

CLUB-FOOT.

FROM the time of Hippocrates club-foot has been well known, and although we cannot be sure that any distinction was made between congenital and acquired deformities, the Father of Medicine described a rational method of treatment for those cases which escaped the fate of death by exposure, as was generally the lot in Greece of the infant born deformed. In another column we publish a paper by Mr. Wilfrid Adams of Bristol in which he describes the course of treatment which he has found successful in 30 cases of club-foot in the new-born which have come under his care. Those who have had the most experience of the treatment of such cases will be the most likely to agree with him and approve of his methods and also will be best able to appreciate the amount of patient perseverance which has been necessary to secure good results. Mr. Adams quite correctly states that no other deformity presents such a record of failures and incomplete cures. When W. J. Little wrote his book on club-foot in 1839 he probably thought that with Stromeyer's introduction of a safe method of tenotomy and the treatment which he described, all club-feet would in future be cured. Yet we find that 89 years after that book appeared, failures and relapses are still reproaching us. The method described by Mr. Adams is essentially that of Stromeyer, or—with the exception of tenotomy—that of Cheselden. In this branch of practice as in so many others, men are often of greater importance than methods, and the more successfully the surgeon can impress his personality on the mother or nurse so as to induce her to take unremitting care of a case of talipes for some years after birth, the better will be his results. If eternal vigilance is a condition of the preservation of liberty as Curran said, it is also a condition of the successful and permanent cure of club-foot. Mr. Adams confesses to a fear of doing too much and turning a club-foot into a flat-foot. We think that this is a baseless fear and agree with Sir Robert Jones and others that over-correction should be aimed at, for the risk of producing any serious disability in this way is trivial and at the worst a foot that is anatomically flat is better than a relapsed club-foot. In some cases, too, it seems that there is no mean, but that for permanence, if the foot is not to be varoid, it must be valgoid, for the middle position is one of unstable equilibrium.

Congenital club-feet are classified by some writers as due either to primary causes affecting the embryo in its earliest stages or to the environment of the fœtus at later stages. Not much is certainly known about this, but to surgeons who have treated many cases of club-foot it is evident that there are some in which the original vice of constitution persists, so that the foot, however thoroughly corrected, tends as growth goes on to reassume the vicious form. Weakness of the overstretched abducting muscles, to which Mr. Adams refers, may be due merely to overstretching or to a more radical tendency in the embryo. There is little doubt that too much was expected of tenotomy for years after Stromeyer's subcutaneous method was made known, and too many surgeons thought that all they had to do was to divide certain tendons. In the method described by Mr. Adams, all the work of correction of varus is done before the tendo Achillis is divided and the subsequent correction of the equinus deformity is comparatively easy. The history of tenotomy is one of isolated successes followed by no permanent advance. No doubt failure to occupy permanently the territory gained by one success was due to lack of cleanliness and to the prevalence of wound infection. The idea that the tight cord of the tendo Achillis might be divided must have occurred to many people and some of them must have seen cases in which tendons accidentally divided or torn had re-united. Among the "cases" described by Little in his book is that of Thomas Inglis, M.D., of Glasgow, who had suffered from what was stated to be talipes equinus congenitus. Before the beginning of his medical studies, Inglis became convinced that the contraction of the tendo Achillis prevented his heel from descending. He communicated a suggestion of tenotomy to the family doctor who discountenanced it. He therefore divided the tendon himself—no doubt by open incision, for there was considerable bleeding. Medical advice was called in and the foot put up in extreme equinus so that the deformity was restored. Fifteen years afterwards the tendon was divided subcutaneously with a most satisfactory result. Thus Inglis might have claimed to be the first surgeon in Great Britain to divide a tendon for the cure of club-foot.

THE ACTIVE SUBSTANCES OF THE THYROID.

FOR some years past, as our readers will remember, Dr. G. Scott Williamson and his colleagues have advanced views on the structure and function of the thyroid which are at variance with those most generally accepted. He regards the thyroid as having a distinctly dual function. On the one hand is the accumulation of colloid in the vesicles which dominate the normal histological picture, on the other the production of a genuine secretion in the adenoid areas of the normal gland and throughout the organ in Graves's disease. The two functions are interchangeable phases in the activity of the normal thyroid epithelium, and tissue in the secreting phase can be distinguished and separated from tissue in the colloid phase by careful examination of slices of many normal glands. Evidence is now produced (*Jour. Path. Bact.*, 1928, xxxi., 255) which seems greatly to strengthen this position. Dr. Williamson, working with Dr. Innes Pearse and Dr. Hilda Cunnington,

found iodine in only 12 out of 200 samples of secreting tissue from normal glands, whereas 100 samples of colloid tissue all yielded iodine in larger or smaller amounts. Moreover, iodine when present in secreting tissue is contained in the cells; the contents of the follicles have none. Similarly all of 20 vesicular goitres contained iodine, and only 11 out of 50 adenoid goitres from untreated primary Graves's disease. Turning next to the biological test for active thyroid substance—the power to accelerate the metamorphosis of tadpoles—they show that secretion tissue is inactive, even when it contains some iodine, and that colloid tissue is active. It is difficult to resist the conclusion that the thyroid is doing two quite different things when it produces colloid (if indeed that substance really originates in the gland) and when it produces secretion, and these observations plainly support the view that Graves's disease is not simply hyperthyroidism. The known active constituent of the ordinary colloid gland is thyroxin which contains iodine and accelerates the metamorphosis of tadpoles; it seems that secretion tissue in the normal gland and in Graves's disease contains no thyroxin. What is curious is that thyroxin increases metabolism and that a raised metabolic rate is one of the fundamental characteristics of Graves's disease. Whether there are two substances which increase metabolism or what other explanation there may be of this apparent difficulty must be left for further inquiry to solve.

THE TREATMENT OF THE PSYCHONEUROSES.

THE Cassel Hospital for functional nervous disorders at Swaylands, Kent, continues its successful work on the psychoneuroses. Its sixth annual report deals with the year 1926, since its practice is to allow a year to elapse before assessing the effect of treatment. 102 new patients were admitted; 70 were well or much improved at the date of the report; 21 were not benefited, and the remaining 11 have died or did not reply to their questionaire. The number of improvements is rising steadily, doubtless because of the experience which the staff have acquired. The reports of the Cassel Hospital form a series of valuable treatises on this branch of psychiatry, and should not be missed by those interested in the minor mental disorders. Dr. T. A. Ross now divides the obsessional group of patients into ruminative and compulsive obsessives, a distinction which has often been admitted but rarely if ever definitely formulated. Obsessions are thoughts or trains of thought from which the patient is unable to free himself, but whereas some of these thoughts are rational, others are not. Continual theological speculation may be undesirable, but it is at least rational; the idea that the hand is gradually turning into a claw is not. The second idea is not a delusion, for the patient is constantly rejecting it, but he very often has to buy it off by performing some compulsive act, which has the quality of a ritual or magical practice designed to avert evil. The difference between the two groups is very important. The ruminative symptom is probably a substitutive idea indicating that some sentimental adjustment is required, or that some effort at adaptation must be made; it is closely allied to an anxiety state and the prognosis is favourable. The compulsive group suffer from a disturbance of a much more primitive layer of the mind, representing a much greater disintegration of the personality, and their prospects are definitely bad. Dr. Ross says that, so far from being a large class, as some writers hold, obsessional patients are rare; he has placed only 12 in the ruminative and six in the compulsive groups since the hospital started. He suggests that many anxiety patients, especially those suffering from phobias of disease, are wrongly classed as obsessional. One of the great virtues of Swaylands is the support which it gives to discharged patients. Of 24 return cases, 17 were much improved or well after their second stay, although the majority only came in for a week or two. A talk over remaining difficulties or old symptoms seems to come more easily the second time, and the feeling that, if the worst should befall, Swaylands is there to help, must keep a number of depressed ex-patients from despair. Against this, of course, is the tendency of a certain number of hysterical patients to regard the place as a refuge from difficulty and to manufacture symptoms to get there. Dr. Ross's views on the incipient case of adolescent insanity are especially important. The hospital has almost given up diagnosing early schizophrenic cases as dementia præcox. A number have got well, and it does not matter much, he thinks, whether these are really hysterical or not. He considers it wiser to call them schizophrenic, treat them if possible, and discharge them if their conduct harms the other patients. They require different handling from the hysteric, for they thrive on a sympathetic method of approach which would make a frank hysteric much worse. Whereas the hysteric benefits from being shown plainly what he is and what he is doing, the schizophrene, according to Dr. Ross, needs to be rather spoilt. This may be because the hysteric has an already integrated personality, whereas the schizophrenic has never reached the stage of "finding himself." Adolescent insanity is admittedly on the increase, and far from being incurable yields very good results to early skilled treatment. The more sparing psychiatrists are with the words "dementia præcox," the greater will be their proportion of rescued schizophrenes.

THE USE OF MERCURY AS A DIURETIC.

Dr. L. Blum and Dr. P. Carlier have just published an account [1] of two cases of œdema and ascites in which the diuretic effect of organic preparations of mercury is shown to be increased if they are preceded by a preliminary course of calcium or ammonium chloride. The first case was that of a man of 62, with alcoholic cirrhosis œdema, gross ascites, and diminished excretion of urine, which a salt-free diet had failed to relieve; the second case was one of cardiac failure in a man of 42, associated with enlargement of the liver, gross œdema and ascites, but no evidence of kidney involvement. In both cases intramuscular injections of 0·5–1·5 c.cm. of neptal were followed by diuresis only if 6 to 12 grs. of calcium or ammonium chloride had been given daily for three to six days beforehand. With this preliminary preparation diuresis was copious and constant; without it the neptal had practically no effect. The authors consider that calcium and ammonium chloride act by producing a slight degree of acidosis which prepares the organism for the diuretic effect of the mercury and make its action much greater. The ideal dose of chloride varies in each case. It sometimes happened that 60 grs. in three days, which was at first sufficient to produce profuse diuresis, had to be increased later to 80 in order to obtain the same effect. Mostly, however, 10 to 20 grs. of salt per day was sufficient. If calcium chloride is used the basic radicle is rapidly excreted in the urine, and if ammonium chloride is used the ammonium is changed into urea in the liver and excreted in this form. The latter salt has certain advantages over the former in that it is less nasty and the taste is less persistent, and it is less likely to cause constipation. On the other hand, since the ammonium is turned into urea, it should not be used if there is extensive liver damage. This combination of chloride and mercury is unnecessary in many cases, which react perfectly to mercury alone, and it is chiefly indicated in cases of alcoholic or cardiac cirrhosis with much ascites. Cardiac and cardiorenal cases with generalised œdema are generally unsuitable for the combined treatment which should only be used if other measures including mercury alone have failed. For the œdema of renal disease these salts are in most cases not to be recommended; while if pyrexia is present calcium and ammonium chloride may be given alone and are often effective, but mercury is contra-indicated.

[1] Presse Médicale, March 21st, 1928.

THE INTELLIGENCE OF DOGS.

THOSE who wish to know what exact observation has made of the sensory and intellectual capacities of domesticated dogs should read a paper in the current number of the *Quarterly Review of Biology* (1928, iii., 1), by Mr. C. J. Warden and Mr. L. H. Warner, of Columbia University. They will probably be surprised to find that the animals come so badly out of the cold arbitrament of experimental psychology. The experiments have to be made with the greatest care; in particular precautions must be taken that the observer cannot indicate by any movement whether the dog is doing, or seems likely to do, rightly or wrongly, in any given test. In this kind of perception dogs are certainly very sharp, which fits in well with their intimate dependence on man as contrasted with the aloofness of a cat; the dog is always quick enough to apprehend the signs and symptoms of approval and disapproval. Excluding this potent source of error, it seems that these animals have little power of discriminating the form of smallish objects or the brightness of lights, though they can by long enough teaching be trained to make fairly fine distinctions. In common with other mammals below the apes and monkeys, they have no sense of colour. Sight seems to be of little help in getting out of difficulties. For example, a dog was trained to open a box by lifting a latch to obtain food; in his absence the box was then turned through 90°, after which he went to the place where the latch had been and pawed about although the latch was plainly in his view. The dog's olfactory sense is admittedly of an order standing very high on the human scale, but even here accurate tests seem to show that his ability to recognise individual human beings by smell has probably been exaggerated, as well as his capacity to follow trails more than a few hours old. Police experts have become very doubtful of the value of a trained dog's recognition of the owner of, for instance, a piece of clothing, and the use of dogs in criminal detection is now forbidden by the Prussian Government. Apart from the fact that, like the cat, he can hear high notes which are beyond the human range, the dog apparently has an auditory capacity not very unlike that of man. But of his power to learn the meaning of words there is a great deal of doubt. The famous dog of Mannheim, so they say, learned reading, writing, and arithmetic from listening to the governess and the children, but "Fellow," trained from puppyhood by Mr. Herbert, of Detroit, to understand the spoken word did not pass very successfully through the tests to which Warden and Warner subjected him; indeed he was wrong about as often as he was right. The inference is that dogs are not nearly as clever as they seem, and that their "intelligence" is mostly derived from their human companion, with whom they have an exceptional power of establishing an emotional nexus.

DEFORMITIES OF THE JAWS.

ORTHODONTICS, though the youngest branch of dentistry, has accumulated a larger literature than any other aspect of dental science. In spite of this we are still distressingly ignorant of the ætiology of irregularities of the teeth, our treatment is correspondingly empirical, and a book which purports to unravel the complex factors concerned in the variations in the forms of the jaws deserves serious consideration. Dr. Sim Wallace has published in the form of a monograph [1] his successful thesis in competition for the Cartwright Prize of the Royal College of Surgeons, and has provided a stimulating and valuable contribution to the ætiology of deformities of the jaws and the concomitant irregularities of the dental arches. He recognises three main factors which may interfere with the normal development of the jaws and lead to irregularity of the teeth. They are: (1) developmental aberrations, such as accessory teeth, absence of teeth, cleft palate, &c.; these are relatively few in number and unimportant. (2) Local displacements, such as the irregularities produced by thumb-sucking, the prolonged retention of a temporary tooth or premature loss of the temporary teeth; these again are a well-recognised group of factors whose action is understood. (3) Subnormal development of the jaw-bones caused by harmful stimuli such as toxins or lack of the normal functional stimuli. This last group, the most important, is the one that presents so many difficulties both of explanation and treatment. The whole trend of orthodontic literature is to dismiss local factors as being of relatively small importance and to lay stress on the early and constitutional origin of defective bone-growth of the jaws. Dr. Wallace's analysis of the component factors in development is shrewd and logical, and his book does much to strengthen the view that general irregularities of the teeth arise in early life and spring from errors in growth, both of deficiency and excess. Though this is a big step forward it remains necessary to apply the hypothesis to the four main groups of malocclusion—namely, inferior protrusion, superior protrusion, inferior retrusion, and open bite. In what ways are these widely differing conditions produced? Here Dr. Wallace's book is less satisfactory, and leaves an impression that the real problem has only been pushed back a stage and in essentials is still unsolved. The author's account of the genesis of these irregularities is ingenious but often hypothetical. We do not find ourselves always in agreement with his observations and still less with all his deductions. Thus it is impossible to accept the statement "that few if any cases of crowding of the temporary teeth in early childhood have ever been recorded," for examination of a large number of children shows that definite crowding is far from uncommon though not so obvious as will be seen later in the same child when the permanent teeth are coming through. In the account of post-normal occlusion or inferior retrusion no mention is made of that variety in which the upper incisors are also retruded instead of being protruded. It is obvious that while both types have in common the post-normal occlusion of the lower teeth, yet there must be dissimilar factors at work to produce the great difference in the upper dental arch in these two types. We are glad to note that Dr. Wallace emphasises the early age at which inferior retrusion becomes established "even before the eruption of the temporary teeth"; there is an increasing body of evidence to suggest that this irregularity may be present at birth and represent a condition developed in utero. Certain redundancies and repetitions might perhaps have been avoided, but the book is admirably produced and illustrated, and merits careful study, not only by dentists, but also by anatomists and anthropologists.

[1] Variations in the Form of the Jaws. By J. Sim Wallace, M.D., D.Sc., L.D.S., Lecturer on Preventive Dentistry, King's College Hospital. London: Baillière, Tindall and Cox. 1927. Pp. 265. 17*s.* 6*d.*

HOSPITAL SERVICE IN AMERICA.

THE hospital service, general and special, of the United States is much more extensive, in proportion to population, than in our own islands. Comparisons of efficiency would be difficult and unprofitable, but we know that the best American hospitals are, in essentials, as good as our own best, while in mechanical detail a few of them are even more advanced, chiefly because they are newer and have been able to adopt the latest ideals of construction and equipment. The existence of so many curative institutions of varying character and importance has long made it desirable that some kind of "Statistical Abstract" of them should be made available. This laborious task has just been completed, for the time being, by the American Medical Association, which, through the Hospital Number of its *Journal*, has issued a complete list of all the hospitals which it recognises. This list forms its first Hospital Register, and is so fully documented as to provide a model of what such a register should be. The outcome of the Association's inquiries is the admission to the Register of 6807

hospitals and sanatoriums, and the exclusion of 462, containing over 11,000 beds. Good reasons are given for the exclusions; some of the institutions are deemed to be controlled by "persons known to be impostors and incapable, either morally or professionally, of providing efficient care for the sick or injured," some are suspected of exploiting quack cures for cancer, consumption and the like, others of permitting criminal or otherwise unethical practices to be carried on. The existence of institutions of doubtful reputation is the most conclusive justification, were any justification needed, for the preparation of a Register of Hospitals recognised by the medical profession in America. Their elimination is a duty which falls to the individual States afflicted by their presence. The geographical distribution of the American hospitals is necessarily very unequal, varying with the population. Thus while there are only ten general hospitals in Delaware, with a population only about double that of Hammersmith, there are 323 in the State of New York, with a population midway between 11 and 12 millions. Roughly two-thirds of the hospitals registered are general hospitals, and their 345,000 beds contain an average of 228,000 patients. Next to them come the 503 institutions for nervous and mental cases, with 373,000 beds, a comparatively narrow margin of which are unoccupied. The figures of maternity hospitals are curiously unexpected. There are only 178 of them limited to maternity cases, with only 5747 beds, and an average of 3695 patients, a fall in number of 84 in the last five years. Thus only about one-tenth of the maternity work is done in the special hospitals. On the other hand, in the same period the number of hospitals used mainly for industrial patients has much more than doubled, though apparently in the most highly industrialised States what may be called the industrial hospitals are comparatively few. It is less surprising, in view of the developments of recent years, to find that the orthopædic hospitals have nearly doubled in number in the last half decade. The American Medical Association finds that there is an increasing tendency for "the Government to assume functions heretofore belonging to volunteer agencies," but it should be explained that the word 'Government" is used to cover not only Federal, but State and municipal institutions. In America religious bodies have always had a strong inclination to maintain hospitals of their own, and there are over 1000 of these confessional institutions with 108,000 beds. It is, however, impossible to confine their benefits to members of the religious bodies concerned, the more especially since a fair amount of support is received from undenominational sources. It is instructive to find that of the 6807 hospitals on the Register 2091 now have physical therapy departments. In a country like America, divided into some 50 or so virtually independent States, Federal action in regard to hospitals would be exceedingly difficult, if not impossible, and there is consequently all the more reason to be grateful for the admirable work done by the Medical Association, and for its bold and decided action in refusing admission to its Register to any institution which fails to conform to elementary professional or moral standards. That action must lead eventually to the elimination of the unworthy.

THE TUBER CINEREUM AND ITS FUNCTIONS.

Two French workers, J. Camus and G. Roussy have done much to confirm the contentions originally made by Jakob Erdheim that centres lying in the floor of the third ventricle have functions with which the pituitary was till recently credited. These authorities showed that the polyuria which followed operative removal of the pituitary was due to damage of the neighbourhood of the tuber cinereum. This polyuria can be produced experimentally by a lesion which leaves the pituitary intact but injures the ventral nucleus of the tuber which is superficially situated. It is usually transitory but may be permanent, in such cases amounting to a true diabetes insipidus. The physiology of diabetes insipidus is still obscure. It has been shown to occur in animals with denervated kidneys and seems therefore to depend upon changes in the blood, though none has been demonstrated by biochemical methods. Camus, J. J. Gournay, and E. Fiterre found that in experimental diabetes insipidus in dogs, produced by piqure of the tuber cinereum, the uric acid tended to disappear from the urine while there was concurrently a great rise in the urinary excretion of purine bases. They believe therefore that the disorder is primarily metabolic, and that the polyuria is a secondary symptom. Both obesity and genital atrophy have been produced in animals by Camus and Roussy by means of experimental lesions of the centres of the tuber. Either may occur alone, or both may be present together, as in the dystrophia adiposo-genitalis of Fröhlich. Lesions of the paraventricular nucleus of the tuber have been shown to produce glycosuria, which, however, is only transitory. Disturbances of temperature regulation and of sleep rhythm have also been described. These researches initiated and continued by French workers seem to have left the pituitary with no function but that of regulating the growth of bones. They raise many problems for which no solution is at present forthcoming, in particular how we are to explain the pharmacological effects of pituitary extract upon diabetes insipidus and insulin hypoglycæmia if the pituitary body itself is not concerned in the metabolism either of water or of carbohydrate. Prof. Léon Binet, commenting on this difficulty in a summary[1] of recent advances in physiology, complains of the tendency of some investigators to accept the reality of pathogenic mechanisms while relying for support upon the results of injections of glandular extracts. It is tempting enough to accept such results as a simple phenomenon of cause and effect, but the curious contradictions that arise prove that more complex processes are often involved. Prof. Binet reviews a number of physiological topics, ranging from the function of the appendix to the physiology of thirst, and from tobacco-smoking to the effects of ablation of the cerebral cortex, with equal shrewdness. Each chapter is well supplied with references mainly to French authorities. The whole provides in a small compass a survey of the main lines along which physiological investigation is proceeding in France; the researches on the centres of the tuber cinereum are certainly among the most important of these and deserve attention.

HUMIDITY AND WEAVING.

A CONTROVERSY which has troubled the cotton trade for over 50 years bids fair at last to come to settlement. It concerns the influence upon health of introducing artificial humidity into weaving sheds in order to assist the manufacture of cotton cloth; this humidification is usually effected by blowing in steam, but in some cases by atomised water. The operatives have long maintained that the humidity exerts an injurious effect upon them; and many Governmental inquiries, as well as three Cotton Cloth Factories Acts, have aimed at minimising the injury. We now have before us a further report,[2] based upon two recent investigations. Of these the one by F. T. Peirce is entirely technical and deals with the effect of humidity on cotton yarns; the other is an intensive and exact inquiry by A. B. Hill, which shows, contrary to past allegation, no evidence that employment in humidified sheds gives rise to more sickness than in so-called "dry" sheds. Whatever may have been the case in the past when longer hours were worked and less was done to keep down the temperature, to-day the one class of shed appears to be no more injurious to the health of the weavers than

[1] Questions physiologiques d'actualité. By Léon Binet, Professeur agrégé de Physiologie à la Faculté de Médecine de Paris. Paris: Masson et Cie. 1927. Pp. 227. Fr.18.

[2] Report of the Departmental Committee on Artificial Humidity in Cotton Cloth Factories, H.M.S.O. 1928. 1s. 3d.

is the other. This statement is true where the sheds are grouped by thermometer readings or where humidity is artificially introduced. The fact, however, became clear that the atmosphere in many so-called "dry" sheds contained as much moisture as in humidified sheds. Hence, the recommendation is made to abolish any legal distinction between the two types of weaving shed when establishing regulations for maintaining atmospheric conditions favourable both for the efficiency of the weaver and for the quality of the cloth. Such optimal conditions appear to prevail at dry-bulb temperatures between 72·5° and 75° F., with a relative humidity of 75–80 per cent. It is therefore proposed that artificial humidification shall cease at 72·5° F. wet-bulb instead of at 75° F. as heretofore. Advantage is to be gained at such temperatures from local air movement, obtained by paddle fans, which cools the weaver but does not appreciably affect the warp thread; means to this end have not yet been perfected. Having regard to physiological evidence as to the influence of high wet-bulb temperatures upon health, the proposal is made that when the wet-bulb reaches 80° F. all work shall cease in any given shed, and the workers shall leave the premises. This course may seem stringent, but in practice the number of sheds affected should not be high, and it is just these sheds which should take more effective steps to improve their working conditions. This report is an excellent example of the application of modern knowledge to industrial practice.

THE Linacre lecture, of St. John's College, will be delivered by Sir George Newman at 3 P.M., on Saturday, May 5th, at the Arts School, Cambridge. His subject will be Linacre's Influence on English Medicine.

THE death is reported from Taunton of Dr. James Alexander Macdonald, at the age of 78. Dr. Macdonald was a Direct Representative on the General Medical Council, and served as chairman of the Council of the British Medical Association from 1911 to 1920.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. C. H. Dawe is placed on the Retd. List with the rank of Surg. Capt.

W. W. Darley and F. C. M. Bamford to be Surg. Lts.

Surg. Comdrs.: R. J. Inman to *Marlborough*; A. J. Tozer to *Victory*, for R.N. Barracks, Portsmouth; A. G. Bee to *Champion*; G. Carlisle to *President*, for three months' post-graduate course; and F. E. Scargill to *Nelson*, temp.

ROYAL ARMY MEDICAL CORPS.

Temp. Lt. F. R. How relinquishes his commn.

TERRITORIAL ARMY.

Capts. D. Stewart and J. P. Clarke to be Majs.

Lts. D. L. Kerr, J. C. Adam, W. A. Ramsay, and W. B. A. Lewis to be Capts.

H. W. L. Nichols, late R.F.A. Spec. Res., to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. G. F. Shepherd, from the Active List, to be Capt.

ARMY DENTAL CORPS.

Capts. to be Majs.: F. H. W. Beer, J. P. Duguid, and T. K. Place.

Temp. Capt. T. G. Doig, Dental Surg., Gen. List, to be Capt.

ROYAL AIR FORCE.

Flying Officers R. J. I. Bell and R. G. Freeman are promoted to the rank of Flight Lts.

INDIAN MEDICAL SERVICE.

Lt.-Col. R. W. Anthony to be Maj-Gen.

Capt. W. E. R. Dimond to be Maj.

Temp. Capt. Chandrian Krishna Row, the relinquishment of whose temp. commn. has been announced, is granted the rank of Capt.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXIII.

THE TREATMENT OF THE COMMONER INJURIES OF THE CARPUS.

THE mechanism of the wrist is unique among the articulations of the human body. It allows more kinds of movement than any other joint, and it takes a great part in the finely coördinated actions which characterise the hand. In the normal wrist a good many landmarks can be made out by palpation. In a case of recent injury, however, inflammatory swelling generally masks all or most of these points, and it is from radiographs that definite information must be sought.

It is therefore of importance to consider the manner of the use of X rays. In all cases two views should be taken with the forearm in full supination, one antero-posterior and one lateral. The lateral view should be taken with the radius and outer side of the wrist resting on the plate and the hand and fingers in line with the forearm. In cases of doubt it may be advisable to take a third, an oblique view, from a point midway between the two others. In cases of unilateral injury radiograms of the sound wrist should always be taken for the purposes of comparison. The first point to be ascertained in examining radiographs is the integrity of the individual carpal bones.

If there is no obvious fracture, the contours of the carpal condyle should be closely studied. Any interruption or irregularity of its line of curvature, either in an antero-posterior or lateral view, is evidence of displacement or fracture of the scaphoid or semilunar, which if not corrected leads to arthritis, or at least to loss of smooth working of the joint. Gross displacement of a bone or bones will be obvious, but slight chipping of the edge of the articular surface of the radius may be less easy to detect, although such an injury may lead to ankylosis of the wrist. Fracture of either styloid process is generally obvious enough. The scaphoid, although not fractured, may be so tilted round a transverse axis as to cast an almost circular shadow on the plate in an antero-posterior view, but viewed in profile its kidney shape will be evident with its lower end projecting forwards beyond the neighbouring carpal bones.

In all carpal injuries symptoms attributable to interference with the median or ulnar nerves are likely to be encountered, especially in cases of dislocation. These include loss of sensation, pain, and in long-standing dislocations trophic signs, such as glossy skin.

According to Destot of Lyons, fractures of the scaphoid or semilunar and dislocation of the latter account for 95 per cent. of injuries to the wrist, excluding sprains.

Sprains.

The symptoms of sprain of the wrist are familiar and in no essential way different from those of carpal fracture. Differential diagnosis depends upon a careful study of X ray plates. When this provides no evidence of fracture or dislocation, sprain may be assumed by a process of elimination. Pain, stiffness, and swelling are the outstanding symptoms. Small marginal fractures of the radius are to be carefully looked for, and if found the case must be treated as of more gravity than a simple sprain, although the lines of treatment will be the same. Rest on a light palmar splint extending from the upper third of the forearm to the heads of the metacarpal bones, and supported by a sling, is advisable. Gentle movements of the fingers and thumb should be encouraged from the first. Massage is not recommended. The length of time during which the splint should be worn must depend upon the duration of the pain and swelling; in most cases of average severity a fortnight should suffice.

Simple Fracture of the Scaphoid.

Simple fractures of the scaphoid are almost invariably caused by falls on the extended hand and fingers, or by violence applied in the same direction, as in a man who tried to fend off a motor-car by pushing forcibly against its radiator with his hand. Falls from a height may cause extrusion of a carpal bone through the skin of the palm, as in a specimen in the Museum of St. George's Hospital, referred to by Mr. Hulke, in Holmes's "System of Surgery" (third edition, 1870, ii., 834), in which both semilunars were so extruded, one of them merely hanging by a small shred of ligament. In this case the forearm bones also projected through the skin. Such violence may cause fracture of the radius, with or without gross carpal injury, or the scaphoid may score the articular surface of the radius and itself escape fracture, or both the radius and the scaphoid may be broken at the same time. Many experiments have been made on the dead body with various results, but it is impossible in the cadaver to reproduce the conditions present in life, particularly as no artificial substitute can be found for muscular action, which by fixing the joint in a given position, must influence the nature of the resulting injury. All that is certain is that if the brunt of the blow is taken by the outer side of the palm the scaphoid is most likely to suffer, and if the hypothenar eminence is most exposed to violence the semilunar is likely to be dislocated or broken.

Cases of simple fracture of the scaphoid, without displacement, should be treated as sprains, the fragments having presumably sprung back into position after the momentary displacement which accompanied the original violence. If the wrist is locked, or if the displaced bone can be felt filling up the hollow of the snuff-box, or the X rays show undue separation of the scaphoid and semilunar bones an anæsthetic should be given and the hand and wrist forcibly flexed and adducted, while with two thumbs the surgeon presses through the anatomical snuff-box upon the fragments, so as to readjust them to the head of the os magnum. The after-treatment is the same as for sprain. The injury may be immediately disabling, but it is on record that gymnasts and boxers and other athletes have incurred fracture as demonstrated by X rays without ceasing their activities, although for a month or two some weakness may be felt. The condition of the upper surface of the carpal condyle, as seen in antero-posterior and lateral X ray plates, will influence the surgeon in his treatment. In all carpal displacements radiographs should be taken after, as well as before, attempts at reduction in order to make sure of true correction. If reduction is unattainable, or if pain and disability persist after some weeks, it is advisable to excise the separated head of the bone through an incision running from the styloid process of the radius to the base of the first metacarpal bone, thus exposing the snuff-box.

Fracture and Dislocation of the Semilunar Bone.

The elongated curved form of the scaphoid renders it more easily broken than the semilunar, whose form is more compact and its mobility greater. Dislocations of the semilunar bone are generally the result of falls or blows, but may be produced by violent torsion of the hand.

Unlike most carpal injuries, fractures of the semilunar are generally produced with the wrist and fingers flexed, as in grasping a hammer, crow-bar, or the starting lever of a motor-car.

Out of 24 cases of fractured semilunar recorded by Destot ten were unaccompanied by other lesions of importance. The remaining 14 were complicated by other injuries of the wrist. These were practically unknown until the introduction of X rays, on which the diagnosis depends. The outline of the carpal condyle will be broken if any displacement has occurred. A fractured semilunar alone is of no more importance than a sprain and should be treated as such.

The semilunar is rarely dislocated and fractured at the same time. In an extensive dislocation the ligaments are necessarily much torn and replacement may be difficult. If the semilunar is nearly, or completely, freed from its ligamentous attachments, its reduction is of doubtful value, as its nutrition must be seriously impaired.

The symptoms are typical, but the patient may not complain much unless the nerves are affected. The wrist is swollen and globular, with an increase more in the antero-posterior than in the transverse measurement, and this swelling is situated below the interstyloid line, which keeps its normal obliquity. There is no silver-fork deformity. The fingers are semi-flexed. The wrist is locked, and in case of gross displacement the ulna nerve is likely to be pressed upon and pain or anæsthesia in the region of its supply may be detected. The median nerve may also suffer. Some active movements of the fingers may be possible and some passive extension of the wrist, but not flexion. Lateral movements are also blocked. Pronation and supination are restrained by pain. The dislocated bone may in some cases be felt under the skin. Such an injury is rarely complicated by typical fracture of the radius for the force is generally spent in the wrist and in partial fractures of the extremity of the forearm.

Nervous troubles may occur without dislocation, as in cases of fracture of the radius or of the scaphoid, which last may affect the median nerve.

Apart from X ray evidence, the projection in the carpal hollow of the semilunar, along with its mobility on flexion, is the best clinical sign of its dislocation.

Reduction should be attempted in all cases, except where the semilunar is obviously freed from its attachments so as to form a loose body beneath the skin, in which case it should be excised. Destot gives the following instructions for reduction:—

An anæsthetic is necessary. The supinated forearm should be firmly fixed by an assistant on a strong table with the hand just over its edge. The surgeon mobilises the wrist by means of movements in all directions. He then grasping the patient's hand with both his own, pulls forcibly in the axis of the forearm, keeping the wrist in hyperextension and adducting it with a view to opening the articulation. When the axis traction is thought to be enough, one hand relinquishes its grasp and seeks the projection made by the semilunar on the front of the wrist. With the finger this is pressed backwards into the joint under the end of the radius while the hand is brought from hyperextension into flexion. The object of the hyperextension is exposure of the head of the os magnum over which the semilunar must be pushed into position. The scaphoid can be left to find its place itself, but if it is broken, pressure in the snuff-box with the hand in forced adduction should replace the fragment.

The sooner such a reduction is made the better but it may be successful up to three weeks after the injury. In old-standing cases, when there is much disability or pain, excision is advisable. Haughton and Holt reported excision of the whole of the first row of carpal bones with a good result.

The forearm and wrist and hand should be put up in plaster in the position of flexion and slight adduction after reduction. At the end of three days the plaster distal to the metacarpus may be removed, so as to allow of passive and afterwards active finger movements. At the end of three weeks the whole splint may be removed and a sling substituted.

Rare injuries do not come within the scope of this article, but it should be noted that dislocation forwards of the cuneiform causes acute nerve symptoms and immediate reduction or excision is imperative.

E. MUIRHEAD LITTLE, F.R.C.S.Eng.,
Consulting Surgeon, Royal National Orthopædic Hospital.

MATERNAL MORTALITY IN HOSPITAL.—The hon. secretary of the British Hospital for Mothers and Babies at Woolwich states that no maternal death has occurred in the last 1300 cases. Since the new building was opened in March, 1922, there have been more than 3000 in-patients and not one death from sepsis.

AN INQUIRY INTO THE RESULTS OF THE LIVER TREATMENT OF PERNICIOUS ANÆMIA.

IN a preliminary report by the Medical Research Council published a few weeks ago (THE LANCET, March 10th, p. 514) it was stated that the treatment of pernicious anæmia by addition of liver to the diet, introduced in America by Minot and Murphy, has already been widely adopted with encouraging results. In order to ascertain the nature of these results we asked a representative group of clinicians to send us a schedule of cases showing the proportion of successes and failures, and to supply information on the following points:—

1. The dose of whole liver employed.
2. The efficiency of the liver extracts tested.
3. The nature of any other treatment given simultaneously.
4. Whether the cases which failed to respond were proven cases of pernicious anæmia as judged by (*a*) history of previous relapse, (*b*) typical blood picture, (*c*) achlorhydria.
5. If any cases of subacute combined degeneration (S.C.D.) were tested and with what result.
6. Any experience of liver treatment in cases of (*a*) secondary anæmia, (*b*) aplastic anæmia.
7. If any evidence was obtained of the disappearance of achlorhydria under treatment.

The replies, along with a number of interesting comments, are here set out.

TWENTY-ONE CASES[1] TREATED AT ST. BARTHOLOMEW'S HOSPITAL, LONDON.

Reported by Prof. F. R. FRASER, M.D., F.R.C.P.,
DIRECTOR OF THE MEDICAL PROFESSORIAL CLINIC.

	Cases treated with—	
	Liver diet.	Liver extract.
Apparently cured	15	3
Improved but relapsed	1	—
Failed to respond at all ..	2	—
Total	18	3

Notes to Schedule.

One case put on liver during remission produced by arsenic kept well for four months, but subsequently died of an intercurrent appendicitis with general peritonitis.

One case responded with a rise in reticulated red cells following whole liver administration, but owing to onset of severe heart failure treatment was abandoned. This patient is now dead.

The three cases treated with liver extract were afterwards given liver diet following the production of reticulocyte crisis by the extract used.

One of the cases which failed to respond had liver extract as well as whole liver.

Replies to Questions.

Dose of Whole Liver.—Half a pound daily, either lightly cooked or raw in form of pulp, reduced when red blood cells reach a normal figure.

Extracts Tested.—(*a*) Eli Lilly and Co.; (*b*) Medical Research Council. Both were efficient in a dose equivalent to 500 g. whole liver daily.

Simultaneous Treatment.—Of the (ten) cases which came under observation in the stage of relapse or before the first remission, all had hydrochloric acid after the immediate effects of liver were observed. The remainder comprise cases in which liver was added to pre-existing therapy—hydrochloric acid, or arsenic, or both—the patients being in a remission. The value of these is that they have remained well since the addition of liver, the longest interval now of this series being 12 months. Five have red cell counts of over 5,000,000, two of over 4,000,000, and one of 3,500,000.

Failure to Respond.—In neither of the two cases which failed to respond was there a history of a previous relapse. In both the blood picture was compatible with a diagnosis of pernicious anæmia, and both showed achlorhydria with a low total chloride content in a fractional test-meal. A point of similarity in these two cases is the fact that in each the anæmia followed an acute respiratory infection; neither showed any signs of subacute combined degeneration. The autopsy findings on one were, except for the absence of any degenerative changes in the nervous system, compatible with a diagnosis of pernicious anæmia. The other case is still under observation.

Cases of S.C.D.—Of the (ten) cases which came under observation in the stage of relapse, or before the first remission, the eight who responded showed objective evidence of involvement of the nervous system. So far there have been no diminution in these signs. The two cases in this series whose anæmia did not respond to liver had, as above stated, no signs of subacute combined degeneration.

Secondary and Aplastic Anæmias.—Five cases of secondary anæmia were given whole liver feeding. In none was there a characteristic response in reticulated red cells, and it was difficult to ascribe any slight improvement to liver therapy. One case of aplastic anæmia was treated with whole liver with no benefit.

Achlorhydria.—In only one case were the stomach contents examined both before and after treatment. The achlorhydria has persisted. It has been noted that several patients feel benefited by the continuance of the administration of hydrochloric acid, although their blood count has resumed a normal picture.

[1] These cases were reported in greater detail in the Brit. Med. Jour., Feb. 4th, 1928, p. 165.

TWENTY CASES TREATED AT THE LONDON HOSPITAL.

Reported by P. N. PANTON, M.B.,
DIRECTOR OF THE HALE CLINICAL LABORATORIES;
AND
F. C. O. VALENTINE, M.R.C.P.,
ASSISTANT DIRECTOR.

A TRUE estimation of the value of the Minot-Murphy diet can scarcely be arrived at in a period of less than ten years, and any conclusions reached from a consideration of the cases presented by us must carry less weight than those described in the American literature owing to the small number of our patients and the short periods during which they were observed.

Methods of Comparison.

Two methods are open to us. By the first we may compare the effect of the treatment during arbitrary periods over a series of patients and for this purpose we have divided the cases into groups corresponding to the length of observation. If it can be shown that there is a fairly constant response to the liver treatment, as indicated by the temporary rise in the reticulocyte count, the steady increase in red cell and hæmoglobin content, improvement in the general health and freedom from relapse, we help to corroborate the prima facie case which has already been made out for the value of the treatment. By the second method we may compare the condition of these patients during these periods with that of another series of patients treated by other methods. Such comparison may be most fallacious if we depend upon our recollection of the effect of treatment in pernicious anæmia before the discovery of the liver diet, but we are fortunate in having at our disposal the complete data of a large series of cases.[1] Such comparison appears to us to be justifiable and to lead to conclusions which admit of little doubt.

The Present Series.

The present series of cases includes 20 examples of pernicious anæmia, and of these eight showed evidence of spinal cord involvement, one case of sprue with a typical primary anæmia blood picture, one case of subacute combined degeneration of the cord without blood changes, and one case of hæmolytic icterus. The old series comprised 114 consecutive cases of pernicious anæmia seen between the years 1909 and 1919 inclusive.

The only patient of this series known to be still surviving is a man first seen in 1909 with a typical blood picture, achylia, and definite cord changes. Now, nearly 20 years later, he is in active employment and good physical condition with a normal blood state, the spinal condition being unaltered. During this period the patient has taken an ordinary diet of average protein content and states that he dislikes liver and has rarely eaten it.

Table of Progress as Shown by Red Cell Count.

Case.	Liver given over a period of—	Red cell count in thousands. On admission.	Liver diet started.	Last seen.
		Group I.		
7 ..	9 weeks.	3100	2800	4000
9 ..	13 „	1800	1800	3800
15 ..	13 „	1900	1900	4400
16 ..	13 „	1600	1700	3600
17 ..	4 „	1300	1400	3110
18 ..	2½ „	1200	1100	2200
19 ..	5 „	1600	1600	4100
		Group II.		
1 ..	5 months.	2400	2400	2900
3 ..	5 „	1500	1500	3800
4 ..	6 „	650	650	4200
10 ..	4 „	1500	1350	4200
11 ..	4 „	3200	3200	4500
12 ..	4 „	2600	2600	3800
13 ..	4 „	1600	1600	4600
20 ..	6 „	1750	1750	6400
		Group III.		
5 ..	8 „	1200	1200	4300
6 ..	7 „	2300	2300	3200
8 ..	7 „	2300	2100	4000
		Group IV.		
2 ..	20 „	1080	1040	4900
14 ..	16 „	1300	?	4500

The 20 examples of pernicious anæmia treated with liver, either in the fresh state or as the extract, are divided into four groups. Group 1, of seven cases observed for three months or less; Group 2, of eight cases observed from three to six months; Group 3, of three cases observed from six to nine months; and Group 4, of two cases observed for over nine months. The red cell count is a fair guide to progress under treatment, and the table gives a brief summary of the cases in their four groups.

Replies to Questions.

Dosage.—Of the 20 cases, four were treated with liver extract. In these patients daily reticulocyte counts were made, and in each case the usual rise and subsequent fall in the percentage of these cells were observed. In two of these cases HCl was added to the treatment about a fortnight later, after the activity of the extract had been demonstrated by the reticulocyte curve and a definite increase in the red cell count. Of the remaining 16 cases, five were put on liver alone and 11 on arsenic or HCl, or both in addition. One case was originally treated (in July, 1926) with a high protein diet, including liver, and was subsequently placed on liver diet. The average amount of liver given was ½ lb. a day, and of liver extract the equivalent of 1 lb. of fresh liver daily, while in hospital. The liver was given both lightly cooked and in the raw state as "cocktails." Both forms appeared to be effective, the cocktails being perhaps the more palatable. The amount taken by the patients in their own homes varied considerably in individual cases. It is known that Cases 1 and 6 failed to take their liver regularly.

Cases of S.C.D.—Eight of these cases of pernicious anæmia showed in varying degree the symptoms and signs of subacute combined degeneration of the cord. We consider that these cases have been under observation for far too short a time to warrant a statement that the cord changes do or do not progress under liver treatment. One additional case, however, of subacute combined degeneration in which there was no anæmia is of interest as he has been on liver for 15 months. Careful examination made at the beginning and end of this period by the same observer showed that no change had occurred in the physical signs, though the patient himself considered that he was slightly weaker. It should also be mentioned that in the one surviving case quoted above, from the earlier series, the cord lesions from the time of disappearance of anæmia—i.e., during 19 years—have remained unaltered.

Achlorhydria.—All these cases had achylia, eight being examined by means of a fractional test-meal, the rest by the ordinary Ewald meal. No re-examination of the gastric juice has been made up to the present.

Two other cases should also be described.

The first had had sprue for 20 years and when first seen his red count was 400,000. After a blood transfusion of 200 c.cm. he was put on liver soup, and the count rose to 1,800,000 in one week. After nine months the red cell count was 6,150,000. Incidentally, three weeks after starting on liver, he had an attack resembling acute gout affecting the toe-joint.

The second case was that of a woman suffering from hæmolytic icterus. She was only kept on liver diet for about ten days, and no rise in the red cell count could be traced. The percentage of reticulocytes rose from about 45 per cent. to 65 per cent. while she was taking liver, but this was not necessarily due to the diet, since considerable variation occurred when this factor was absent.

Comments.

Anyone acquainted with the results of treatment in pernicious anæmia before the discovery of liver diet would regard the results recorded in this small series of cases as encouraging, but would recall some patients in whom unexpected and rapid remissions occurred, and others in whom the disease dragged out a long course of many years. In making a comparison with the course of the disorder observed in the older and longer series, we believed that deductions might be drawn if we considered all the cases at the same intervals of time and noted how many patients improved, relapsed, or died in these intervals.

It was found that at the end of three months after their first admission to hospital, out of 114 cases in the earlier series, 37, or 31·2 per cent., were dead; after six months, 50, or 43·9 per cent., were dead; and four others, or 3·5 per cent., had

[1] Panton, P. N., Maitland-Jones, A. G., and Riddoch, G.: Pernicious Anæmia: An Analysis of 117 Cases, THE LANCET, 1923, i., 274.

relapsed; after nine months 60, or 52·6 per cent., were dead, and eight, or 7 per cent., had relapsed.

A conceivable explanation of the overwhelming difference between the results in the two series may lie in the possibility that, owing to the general interest aroused by the new treatment, patients present themselves for examination at an earlier stage. Such explanation may be true in part, and is perhaps reasonably examined by comparing the average red cell count on admission to hospital in the two series. This average in the first series was 1,387,000, and in the second 1,790,000. The difference is in favour of the second series, but is hardly greater than, owing to the smaller numbers, might occur by chance, and is certainly not sufficient to account for the discrepancy in the courses run.

We do not yet know if patients with pernicious anæmia will respond indefinitely to liver taken by the mouth, or if they will ever be able to leave off the treatment, but the remarkable experience in following up the first series of cases of interviewing a succession of sick persons or sad relatives, and in the second series of seeing nothing but hopeful patients, convinces us that the Minot-Murphy discovery ranks as a therapeutic advance of the first importance.

Our thanks are due to the physicians of the London Hospital for allowing us to publish these results.

SIX CASES TREATED AT ST. MARY'S HOSPITAL, LONDON.

Reported by Prof. F. S. LANGMEAD, M.D., F.R.C.P., *and* C. M. WILSON, M.D., F.R.C.P.,
PHYSICIANS TO THE HOSPITAL.

	Cases treated with liver diet.
Apparently cured	6
Improved but relapsed	0
Failed to respond at all	0
Total	6

Replies to Questions.

Dose of Whole Liver.—Half a pound of cooked liver daily, preceded in one case by ¼ lb. cooked liver daily.

Simultaneous Treatment.—None in two, hydrochloric acid in four. Arsenic in one, during a period when only ¼ lb. of liver was given daily, but improvement was enhanced when the dose of liver was increased to ½ lb. daily and the arsenic was stopped.

Cases of S.C.D.—No cases of subacute combined degeneration were treated, but symptoms referable to the nervous system were present in four; these d sappeared under treatment in three, whilst in the fourth the subjective symptoms went but the knee- and ankle-jerks remained absent.

Achlorhydria.—The gastric contents were examined in three before and after treatment, achlorhydria was present in one and achylic gastrica in two; in no instance were these abnormalities corrected by the treatment.

Comments.

In one case the patient, after ten weeks of liver treatment, walked without effort and returned to active life after having been in bed for two years. In three considerable improvement had already followed other treatment. In one of these ultra-violet light had been used with arsenic, in another treatment by a blood extract (specially prepared by Dr. A. C. Alport) and later by arsenic, and in the third by an initial transfusion followed by ultra-violet light. When these treatments were superseded by liver alone, slow, but definite, improvement was replaced by rapid improvement leading to apparent cure.

Two Cases Related.

CASE 1.—Male aged 41. Duration of illness five months before admission. Increasing pallor, weakness, palpitation. Exhausted after five minutes' walk to business. Achlorhydria. No nervous symptoms. Blood count: Red blood cells, 1,320,000; Hb., 32 per cent.; colour-index, 1·25; white blood cells, 5500. Differential count: Polymorphs, 66 per cent.; small lymphocytes, 32 per cent.; large lymphocytes, 1 per cent.; eosinophils, 1 per cent.; characteristic changes in red blood cells.

Treatment.—1. Ultra-violet light, arsenic, hydrochloric acid. Two weeks later little or no improvement. Red blood cells, 1,500,000 per c.mm.; Hb., 32 per cent.; C.I., 1·1; white blood cells, 6100. Differential count: Polymorphs, 69 per cent.; small lymphocytes, 20 per cent.; large lymphocytes, 8 per cent.; hyalines, 1 per cent.; mast cells, 2 per cent.

2. Several teeth removed after X ray examination had revealed considerable apical sepsis, and afterwards the same treatment followed. Considerable improvement, and when discharged five weeks later, blood examination as follows: Red blood cells, 2,960,000; Hb., 76 per cent.; C.I., 1·25.

3. After discharge, continued on same treatment and took, also, ¼ lb. cooked liver daily. Continued to improve and returned to work. Blood count six months after discharge: Red blood cells, 3,280,000; Hb., 76 per cent.; C.I., 1·2; white blood cells, 4400. Appearances of red cells nearly normal.

4. Liver increased to ½ lb. daily, arsenic and ultra-violet light stopped, HCl continued. Continued improvement. Blood count ten weeks later: Red blood cells, 4,500,000; Hb., 92 per cent.; C.I., 1·02; white blood cells, 7500. Differential count: Polymorphs, 58 per cent.; small lymphocytes, 14 per cent.; large lymphocytes, 13 per cent.; hyalines, 14 per cent.; eosinophils, 1 per cent.; red blood cells show very few changes.

He is in full work, looks well, and says that he feels better than he has done for many years. Achlorhydria still present.

Result.—No improvement until removal of focal sepsis, but improvement with As., HCl, and ultra-violet light after this was done. It continued after ultra-violet light replaced by ¼ lb. liver daily; enhanced when As. also stopped and liver increased to ½ lb. daily. HCl given throughout. Apparent cure except for persistent achlorhydria.

CASE 2.—Woman aged 53. Many partial remissions since onset of illness in 1912. In February, 1916, the red blood cells numbered 1,724,000, the hæmoglobin 35 per cent., whites 4800, and the differential count was as follows: Polymorphs, 50 per cent.; small mononuclears, 42·8 per cent.; large mononuclears, 4·4 per cent. In 1923 the red cells had fallen to 1,500,000 and the hæmoglobin to 30 per cent. At that time she complained of numbness of the feet and arms and the ankle-jerks and knee-jerks were absent. In September, 1927, the red cells numbered 1,900,000, and the hæmoglobin 40 per cent., normoblasts were present and the red cells were irregular in size and shape; she was admitted to hospital, where blood transfusion was carried out twice at intervals of a fortnight. There was a slight improvement in the blood picture. Fourteen days later she was put on ½ lb. cooked liver daily, which she has taken regularly since—that is, from Nov. 1st, 1927, until the present time. On March 25th, 1928, the red blood cells numbered 5,608,000; hæmoglobin, 85 per cent.; colour-index, 0·78; white blood cells, 11,000. The red cells were normal in size and shape, and no abnormal cells were seen in the film. In the differential white count the polymorphs numbered 44·3 per cent.; small mononuclears, 49 per cent; and the large mononuclears, 3·3 per cent. The nervous symptoms, such as numbness, were no longer present, but the knee-jerks and ankle-jerks were absent. Dr. W. G. Johnston, of Brixton, with whom I had seen the patient originally in consultation, tells me that during the time she was taking the liver there was no other treatment of any kind and that her diet was not altered except for the addition of liver.

FOUR CASES TREATED AT ST. THOMAS'S HOSPITAL, LONDON.

Reported by Prof. H. MACLEAN, M.D., F.R.C.P.,
DIRECTOR OF THE CLINICAL MEDICAL UNIT.

	Cases treated with liver diet.
Apparently cured	4
Improved but relapsed	0
Failed to respond at all	0
Total	4

Replies to Questions.

Dose of Whole Liver.—Half a pound, cooked, daily.

Extracts Tested.—One early extract used in one case of pernicious anæmia and in one case of myeloid

leukæmia. No improvement in either case, but extract was obviously inactive.

Simultaneous Treatment.—Arsenic in two cases. Hydrochloric acid in one.

Failure to Respond.—All responded well.

Cases of S.C.D.—One patient showed paræsthesia and sensory changes, which disappeared during treatment.

Achlorhydria.—No evidence of disappearance.

TWENTY-FIVE CASES TREATED AT UNIVERSITY COLLEGE HOSPITAL, LONDON.

Reported by JANET VAUGHAN, B.M., B.CH.,
FROM THE DEPARTMENT OF CLINICAL PATHOLOGY.

Disease.	Liver treatment.	Cases.	Cured.	Failed.
Group I.				
Pernicious anæmia..	Whole liver, 250 g. daily	8	8	—
	Liver extract ..	4	4	—
	Liver extract and whole liver ..	1(*a*)	1	—
Total of cases treated with whole liver and/or extract ..	.. .. ..	13	13	—
Group II.				
Anæmia secondary to hæmorrhage.	Whole liver, 250 g. daily	4	3	1(*b*)
	Liver extract ..	3	2	1(*c*)
	Total	7	5	2
Group III.				
Anæmia unassociated with hæmorrhage—				
1. Lymphatic leukæmia.	Whole liver, 250 g. daily	1	—	1
2. Lymphatic leukæmia.	Liver extract ..	1	—	1
3. Syphilitic spastic paraplegia.	Whole liver, 250 g. daily	1	—	1
4. Carcinoma of the prostate with secondary deposits in bones.	Whole liver, 250 g. daily, followed by liver extract	1	—	1
5. Secondary anæmia, cause unknown.	Whole liver, 250 g. daily	1	1	—
	Total	5	1	4

Notes to Schedule.

(*a*) One case which failed to respond to liver extract reacted later to whole liver 8 oz.

(*b*) Post operation bilateral femoral thrombosis associated with persistent pyrexia was present as a complicating factor in this case.

(*c*) Sufficient extract for a seven days' test only was available. Patient is now having whole liver, but treatment has not been continued long enough to draw any further conclusions.

Replies to Questions.

Dose of whole cooked liver, 250 g. a day. Dose of extract, 500–750 g. a day.

Extracts Tested.—In such a small series of cases it is difficult to reach any definite conclusions as to the comparative efficiency of the extracts tested, especially when the reaction time to whole liver would appear in some cases to be longer than the usual ten days. One case definitely failed to respond to doses of one extract up to an equivalent of 1250 g. of fresh liver a day for 18 days, and when given a different extract reacted dramatically on the fifth day. It is unlikely that there was any summation effect in this case, as a further patient on the second extract also responded on the fifth day.

Simultaneous Treatment.—Arsenic in three cases of pernicious anæmia.

Cases of S.C.D.—In one case no alteration in condition of the nervous system after two months' treatment, both with extract and whole liver, though improvement in blood picture. In a second case no alteration in condition of the nervous system after seven months' treatment with whole liver, though improvement in blood picture.

Achlorhydria.—No evidence was obtained as to its persistence.

Comments.

Three cases of pernicious anæmia showed a considerable delay in reaction: (1) Three months—during the first two months the patient was only taking very small quantities of whole liver, approximately 3 oz. daily, owing to persistent nausea. She then started to take the full diet with gradual improvement to a practically normal blood picture at the end of a further four months. (2) Twenty days—the first ten on extract, to which there was a definite recticular response and a slight rise in the red cells. The patient was then put on whole liver 8 oz., and at the end of a further ten days the red cells again rose, and continued rising, till normal figures were reached. (3) Forty-four days. Fifteen days non-commercial extract known to be active. No response. Twelve days non-commercial extract of unproved potency. Seventeen days whole liver 8 oz., followed by response.

A remarkable gain in weight was noted in all cases, especially those on whole liver. Details will be published later.

TWO CASES TREATED AT LEWISHAM HOSPITAL.

Reported by E. P. POULTON, M.D., F.R.C.P.,
CONSULTING PHYSICIAN TO THE HOSPITAL.

R. B., aged 57, married, had been operated on for gall-stones in January, 1927. She was admitted to Lewisham Hospital under the care of Dr. I. Lewis in a comatose condition, vomiting bile-stained fluid, and with ketonuria, on July 15th, 1927. For four weeks she had been suffering from pain and vomiting similar in character to her previous attack of gall-stones. The vomiting cleared up about ten days after admission. The spleen was palpable. The blood counts carried out by Dr. R. S. Ralph are shown in Table I. The report on the blood film of August 8th states:

TABLE I.

—	Date in 1927—					
	Aug. 2.	Oct. 7.	Oct. 19.	Nov. 10.	Nov. 21.	Dec. 5.
Hb. (per cent.)	25	20	37	55	65	78
Red cells (in thousands)	1,168	992	1,920	2,944	4,168	4,100
C.I.	1·1	1·0	1·0	0·9	0·8	1·0
White cells ..	8,000	3,000	6,000	14,000	7,000	14,000
Polymorphs .	3,280	—	—	10,500	4,970	10,100
Lymphocytes	4,400	—	—	2,660	1,540	2,940
Hyalines ..	240	—	—	700	350	640
Eosinophils..	80	—	—	140	70	140
Mast cells ..	0	—	—	—	70	—
Myelocytes .	0	—	—	—	0	—

"The reds vary greatly in size. Macrocytes and microcytes are common, polychromasia is observed, and there are numerous poikilocytes. No nucleated forms could be seen." The serum gave a direct positive result to Van den Bergh's test. It was found impossible to carry out a test-meal examination. The patient was given ½ lb. of raw liver per day, beginning on Oct. 10th, and just previously to this the hæmoglobin had fallen to 20 per cent. Clinical improvement and improvement in the blood picture followed immediately. It is interesting to note that this was accompanied by an increase of the polymorphs and a diminution in the lymphocytes. She was discharged on Dec. 15th, 1927, and there is a note that "she now has the best colour of any patient in the ward." On Nov. 22nd she was ordered hydrochloric acid dil. ℥ i. in 4 oz. lemonade four times a day before meals.

The most striking point about this patient was the improvement in her nervous symptoms. On August 2nd a double extensor plantar response was found, and clumsiness in the use of the fingers showed that some subacute combined degeneration of the cord was present. On Dec. 1st the left plantar response was flexor, the right flexor first and subsequently extensor. She noticed that the clumsiness of her hands and fingers had improved. She was last seen

on March 6th. Since leaving the hospital she had been taking ¼ lb. of liver daily. The improvement in her hands and fingers was maintained; but she had an obviously spastic gait, and was compelled to walk with a stick.

B. J., aged 46, married, was admitted to Lewisham Hospital under the care of Dr. L. W. Hale on Jan. 10th, 1928. She came up complaining of "going off her legs." Dr. Ralph's blood counts are shown in Table II. The

TABLE II.

—	Date in 1928—		
	Jan. 13.	Feb. 13.	March 23.
Hb. (per cent.)	40	75	110
Red cells (in thousands) ..	2,272	3,724	5,900
C.I.	0·9	1·0	0·9
White cells	6,000	9,500	17,000
Polymorphs	2,460	3,280	6,630
Lymphocytes	3,240	3,800	5,600
Hyalines	120	1,710	1,190
Eosinophils	180	570	3,400
Mast cells	0	48	170
Myelocytes	0	95	—

report on the film of Jan. 13th stated: "The red cells vary greatly in size, and there is marked macrocytosis. Poikilocytes are common, as also are basophils, both of the punctate and diffuse variety. No nucleated forms were seen." A fractional test meal examined at intervals of half an hour, one hour, and one and a half hours, showed the absence of free hydrochloric acid and a maximal total acidity of 10 c.cm. N/10 acid per cent. She was at once given ¼ lb. of raw minced liver twice a day. This was taken in a cup of warm water to which half a cube of Oxo had been added. A remarkable improvement set in immediately, and at present (March 29th) she has an abnormally bright-red complexion. The red cells and hæmoglobin are now above the normal value. The white count (March 23rd) shows an increase of all the cells; the eosinophilia is the most marked feature; but the polymorphs are increased by 100 per cent. The red cells now vary only slightly in size. The last menstrual period before admission was in December, 1926. Now she has had a scanty period in February, 1928. On March 12th the resting juice and fractional test-meal examined at three-quarter hour intervals, again showed complete absence of free hydrochloric acid, and a maximal acidity of 20 c.cm. N/10 acid per cent. A similar result was again obtained at the beginning of April. So far no hydrochloric acid has been given to the patient.

During treatment this patient also showed marked improvement in her nervous symptoms. On admission the plantar responses were definitely extensor. She complained of numbness over her right arm, over both palms, and over the feet and the legs, extending up the lower third of the thighs. There was marked impairment to cotton-wool and pin-prick over these areas, and the patient could not sew or knit. Now (March 29th) the numbness has largely disappeared; but there is tingling of the palms. The sensation to pin-prick is almost perfect and the sensation to cotton-wool shows a marked improvement. She can knit and sew. The plantar response on the left is flexor at first and later extensor. The response on the right is extensor, but rather indefinite.

Owing to the great improvement in the symptoms due to subacute combined degeneration of the spinal cord in these cases, it has been considered best to give full details. My thanks are due to Dr. Lewis, Dr. Hale, and Dr. Ralph for supplying me with the necessary data, and to Dr. Humphrey Nockolds, superintendent of the hospital, for allowing the publication of the cases.

SEVEN CASES TREATED AT BIRMINGHAM.

Reported by A. P. THOMSON, M.D., M.R.C.P.,
ASSISTANT PHYSICIAN TO THE GENERAL HOSPITAL.

IN the cases (1 to 5 inclusive) in which the diagnosis of pernicious anæmia was reasonably certain the beneficial effect of the diet was remarkable. In Cases 1 and 5 no other treatment of any kind was employed (apart from rest in Case 5). The other three cases took arsenic in some form. No relapses have occurred, but only two cases have been treated for a year. In two cases (1 and 4) repeated fractional test-meals two months and eight months after beginning the diet showed no return of free hydrochloric acid. Case 6 was doubtful; it may have been true pernicious anæmia, but the history was not convincing, and I was, unfortunately, not given the opportunity of investigating a fractional test-meal. If this case was, in fact, one of secondary anæmia it is only one that has improved. I have notes of three other cases of secondary anæmia associated with chronic nephritis, tubercle, and hæmorrhoids, in which the liver diet appeared to have no effect. Two cases of subacute combined degeneration have been treated recently, but in neither of them was there any improvement in the nervous signs and the anæmia was only slightly reduced. Case 7 was interesting. The anæmia was aplastic in type and apparently due to benzol poisoning. No improvement followed liver diet or the use of liver extract. In all cases the liver was taken cooked, with the exception that Case 2 took a few sandwiches of raw liver in the early stages.

CASE 1.—Mr. A. B., aged 58. October, 1927: No sore tongue. Symptoms of anæmia "on and off" three years. Definite diagnosis two years ago—at time of relapse.

Blood: R.B.C., 1,100,000; W.B.C., 4600; Hb., 36 per cent. Films: Poikilocytosis and punctate basophilia very marked. Fract. test-meal: Absence of HCl.

Treatment: Liver diet. No other treatment; refused to rest.

December, 1927: R.B.C., 3,000,000; Hb., 75 per cent. Films normal. Fract. test-meal: Absence of HCl. March, 1928: Quite well; continuing diet.

CASE 2.—Mrs. C. D., aged 52. August 21st, 1927: Sore tongue many years. Marked anæmia six months, typical appearance. Spleen palpable, febrile for some weeks.

Blood: R.B.C., 1,100,000; W.B.C., 2700; Hb., 34 per cent.; index, 1·4. Films: Showed poikilocytosis and a few nucleated red cells.

Treatment: Liver diet (at first liver given raw, later cooked) and small doses of arsenic by mouth. Temperature became normal in two days. A course of N.A.B. given in September, 1927.

Progress: Uninterrupted. Sept. 25th: R.B.C., 3,400,000; Nov. 18th: R.B.C., 4,040,000. March 20th, 1928: R.B.C., 4,000,000; W.B.C., 7800; Hb., 95 per cent. Films normal. Spleen no longer palpable; feels perfectly well.

CASE 3.—Miss E. F., aged 39. Feb. 19th, 1927: Sore tongue three and a half years—very severe at times. Symptoms of anæmia six months. Spleen palpable.

Blood: R.B.C., 1,500,000; W.B.C., 6500; Hb., 48 per cent; index, 1·5. Films: Usual changes of P.A.

Treatment: Liver diet; course of N.A.B.; Ac. HCl dil.

Progress: Rapid; has been at work for six months.

Last blood examination Sept. 22nd, 1927: R.B.C., 5,500,000; Hb., 85 per cent. Films normal. Spleen not palpable.

CASE 4.—Mr. G. H., aged 52. Jan. 21st, 1927: Sore tongue four years ago. Rest cure for "nervous exhaustion" two years ago—(? relapse). Typical appearance; spleen palpable.

Blood: R.B.C., 1,200,000; W.B.C., 3200; Hb., 30 per cent. Films: Usual changes. Fract. test-meal: No free HCl.

Treatment: Liver diet; arsenic by mouth.

Feb. 15th, 1927: R.B.C., 2,500,000; Hb., 58 per cent. September, 1927: R.B.C., 5,000,000; Hb. 90 per cent. Films normal. Spleen not palpable. Fract. test-meal: No free HCl.

CASE 5.—Mrs. I. J., aged 48. March 13th, 1928: Anæmic many years. Two attacks of (?) jaundice a year ago. Typical appearance, very weak, appeared to be dying.

Blood: R.B.C., 730,000; W.B.C., 2400; Hb., 17 per cent.; index, 1·16; nucleated red cells, 20; reticulocytes, 7·8 per cent. Well-marked poikilocytosis, little punctate basophilia.

Treatment: Liver diet.

March 17th, 1928: R.B.C., 1,938,000; W.B.C., 3200; Hb., 25 per cent.; nucleated red cells, 13; reticulocytes, 12·8 per cent.

Treatment changed to Oxo liver extract. Fract. test-meal: Absence of HCl. March 23rd.: Hb., 42 per cent.; R.B.C., 2,463,000.

CASE 6.—Mr. K. L., aged 45. Nov. 15th, 1927: No sore tongue. Profound anæmia which had developed insidiously during the four previous years. Spleen not palpable.

Blood: R.B.C., 1,800,000; W.B.C., 7600; Hb., 30 per cent.; index, 0·83. Well-marked poikilocytosis, but nothing else abnormal.

Treated on liver diet, and made a rapid recovery.

This is clinically a doubtful case of pernicious anæmia. The man worked with chemicals and it was thought that his anæmia might result from chronic poisoning.

CASE 7.—Mr. M. N., aged 62. Lymphatic leukæmia, 1927.

Treated with large doses of benzol while abroad, and returned home with leucopenia and intense anæmia of aplastic type.

Liver diet had been taken steadily for three months without improvement, and liver extract for two weeks has had no effect.

SIX CASES TREATED AT THE GENERAL HOSPITAL, WOLVERHAMPTON.

Reported by S. C. DYKE, D.M., M.R.C.P.,
CONSULTING PATHOLOGIST TO THE HOSPITAL.

—	Cases treated with—		
	Liver diet only.	Liver extract only.	Both.
Apparently cured ..	3	1	2
Improved but relapsed ..	—	—	—
Failed to respond at all ..	—	—	—
Total	3	1	2=6

Replies to Questions.

Dose of Whole Liver.—Following the advice of Minot and Murphy a dose of ½ lb. liver was given daily at the commencement of treatment. When the blood picture approached the normal the daily dosage was dropped to ¼ lb., and later yet in the treatment to 4 oz. three times a week. This amount was found sufficient to keep the blood count at a fairly normal level in most of the patients. If it showed signs of dropping the liver was increased, and in every instance where this was done the response of the red cells was quite satisfactory. In using extracts of liver a dosage was given equal, according to the makers' specifications, to ½ lb. of whole liver daily.

Patients treated on whole liver were put upon the following diet, arranged by Sister D. Roberts, to whom my thanks are due for this and for her success in overcoming the initial repugnance of several of the patients to the raw liver.

Breakfast.—One egg; dry and crusty bread, with butter to taste (not more than two rounds); tea or coffee (plenty of milk, sugar sparingly).

Lunch.—3 oz. of raw minced liver (made into sandwiches), sauce may be used for flavouring; an orange.

Dinner.—2 oz. of lightly cooked liver; 3 oz. of meat (if desired); 4 oz. of cabbage.

Tea.—2 oz. of lettuce; bread and butter (two rounds); one orange; tea.

Supper.—3 oz. of liver, as thick soup (flavoured with vegetables); 3 oz. of greens, Bovril.

Extracts Tested.—Two forms of liver extract were used in the course of the investigations—Hepatopson, a powdered preparation, and Liver Juice (Oxo). Both appeared to be effective in raising the blood count and keeping it up. In the one case treated from the beginning on Hepatopson the response was rather slower than in those cases treated on the whole liver, but when it came was quite satisfactory. Owing to the fact that until lately no liver juice was generally available other than that controlled by the Medical Research Council no case has been tried on a liquid preparation alone.

Simultaneous Treatment.—One patient, first seen with hæmoglobin 18 per cent., red cells 870,000 per c.mm., received a transfusion of blood which raised the hæmoglobin to 25 per cent. and the red cells to 1,470,000 per c.mm. The blood was taken from a patient suffering from polycythæmia and having a red cell count of 10,000,000 per c.mm. Although the desperate condition of this patient made it appear probable that nothing short of the transfusion could have saved him it is possible that he might have done without it, as in a further case first seen with 18 per cent. of hæmoglobin and only 650,000 red cells per c.mm., and in whom the initial condition was even worse, treatment was carried on by liver alone and the patient made a good recovery. In two cases septic teeth were removed. No other treatment apart from the administration of liver was used. Several of the patients had been on arsenic and hydrochloric acid by mouth, but this was stopped before the commencement of liver feeding.

Case of S.C.D.

CASE 17.—Male aged 50. Four years' history of increasing weakness with constant burning pains in the legs, particularly the right. On admission, Feb. 4th, 1928, he showed characteristic disturbances of sensation and alterations of the reflexes in both legs, particularly in the right, priapism at night, tingling in hands. Blood picture: Hæmoglobin, 68 per cent.; red cells, 4,570,000 per c.mm.; colour-index, 0·74; white cells, 8000 per c.mm. Differential count: Polymorphs, 67 per cent.; lymphocytes, 16 per cent.; monocytes, 7 per cent.; eosinophils, 10 per cent. Fractional test-meal showed complete absence of free hydrochloric acid. Patient was tried with the liver diet for three weeks, at the end of which time his blood picture and general condition showed no change. Discharged unimproved.

Cases of Secondary Anæmias.

CASE 10.—Profound anæmia of many years' duration with low colour-index and absence of morphological changes in the red cells, occurring in a female aged 53. The patient adhered to the diet well but without improvement.

CASE 11.—Anæmia following purpura in a diabetic patient, no benefit.

CASE 12.—Anæmia associated with tuberculous peritonitis, no benefit.

CASES 13, 14, 15, 16.—Anæmia associated with gastric disturbances, "gastric ulcers" absent at operation, dyspepsia and so forth, no benefit.

Cases of Aplastic Anæmia.

CASE 8.—Female aged 32. History of 12 months' bleeding from gums and susceptibility to bruising. Three days previously severe epistaxis. On admission, May 31st, 1927: Hæmoglobin, 21 per cent.; red cells, 930,000 per c.mm.; colour-index, 1·16; white cells, 1500 per c.mm. Differential count: Polymorphs, 46 per cent.; lymphocytes, 50 per cent.; monocytes, 4 per cent; platelets, 5000 per c.mm. No morphological abnormalities of red cells. Between the date of admission and June 10th, 1927, this patient was given six infusions of blood by Dr. Phyllis Grainger, house physician to the hospital. She was placed on the liver diet and this was persisted with for two weeks between two of the transfusions. During this time the hæmoglobin dropped from 25 to 20 per cent., and the red cells from 1,730,000 per c.mm. to 1,020,000 per c.mm. As the patient found the diet nauseating and it was obvious that it was doing no good it was then dropped. After a further transfusion, which raised the hæmoglobin to 27 per cent. and the red cells to 1,460,000 per c.mm., the patient was sent home and died six weeks later.

CASE 9.—Accurate notes not available. Female aged 16. Three months' history of susceptibility to bruising and bleeding from gums and nose. Admitted in a condition of profound anæmia, with marked diminution of platelets. Two infusions of blood were given and the patient was placed on the liver diet. She found this nauseating and, as in the previous case no benefit resulted, it was not continued. Death occurred after the patient had been in the hospital for one month.

Achlorhydria.—Not investigated.

Comments.

The reticulocyte count constitutes a very important means of ascertaining early whether or not a given case will respond to the treatment. A rise in the

proportion of reticulocytes to red cells occurs within three days of the commencement of treatment in cases responding satisfactorily. A fall in the serum bilirubin is also an early manifestation of improvement and would probably serve as well as the reticulocyte count as an indication of response to treatment.

Symptoms referable to the alimentary tract were prominent in five of the six cases; these symptoms comprising abdominal pain, vomiting, and anorexia all disappeared in every case early in treatment. Two of the six patients complained of dimness of vision and one showed irregular movements of the eyes which had led to a diagnosis of nystagmus. These ocular symptoms disappeared in both cases with the treatment. Four cases complained of symptoms, such as weakness of the legs and numbness and tingling of the hands and feet referable to cord lesions. In every case these symptoms remained after the blood picture had been rendered normal and the patient was in every other way well. In no case were these symptoms sufficiently severe to interfere with the patient's return to his work.

Liver in some form or other is specific for pernicious, Addisonian, or regeneratory anæmia. It is usually efficacious whether given whole or in the form of a suitable extract. No additional treatment other than symptomatic is necessary. Treatment by liver appears to have no effect upon aplastic or aregeneratory anæmia nor upon secondary anæmias.

TWENTY-FOUR CASES TREATED AT THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE.

Reported by J. C. SPENCE, M.D., M.R.C.P.,
ASSISTANT PHYSICIAN AND CHEMICAL PATHOLOGIST TO THE INFIRMARY.

IN November last I reported [1] the results of the treatment of 20 cases of pernicious anæmia with the liver diet of Murphy and Minot. Since then I have had four more cases under treatment, making a total of 24 cases. In four of these cases a liver extract was used for the first few weeks of treatment. It was not possible to continue the extract until a complete cure was achieved, and after the initial trial of the effect of the extract the subsequent treatment in these four cases was carried out by means of a liver diet.

	Cases treated with liver diet.
Apparently cured	22
Improved but relapsed	1
Failed to respond	1
Total	24

Replies to Questions.

Dose of Whole Liver.—My experience is, that if the improvement is to be maintained, the patients should eat at least two pounds (2 lb.) of liver a week. The liver may be lightly cooked without losing its effect.

Extracts Tested.—Four cases were treated with liver extract, using a daily dose equivalent to ½ lb. of fresh liver daily. It is not possible to compare these results with those of treatment by eating liver itself as the extract was used for a much shorter period. But so far as the efficacy of the extracts could be judged by their power to provoke a "reticulocyte crisis," it was shown that the extracts were therapeutically active, but not to the same degree as liver itself. That is, it required a dose of extract obtained from more than 1 lb. of liver to produce an effect equivalent to that half pound of lightly cooked liver itself. This would denote that in the preparation of the extract more than half of the effective material of the liver was lost.

Simultaneous Treatment.—In eight of the cases no other treatment of any kind was used; they responded as readily as those receiving hydrochloric acid.

One case of *aplastic anæmia*, a boy aged 8 years, was treated. His erythrocyte counts for two weeks before treatment fell gradually from 1,200,000 to 950,000. He was given 1 lb. of liver daily for one week and then ½ lb. daily for the next week, and later ½ lb. on alternate days. The treatment had no effect in the course of the disease, and he died ten weeks later. No post-mortem was obtained.

Achlorhydria.—In three cases the stomach contents were re-examined after intervals of three, five, and six months. In each the achlorhydria persisted.

Comments.

Of some of the patients who have been under treatment for more than six months, it cannot be said that they are completely cured, some anæmia with red cells from 3–4 millions being present, but in these cases it has been found that they have not been taking the liver diet satisfactorily.

One of the difficulties that has arisen is that patients eating liver tend to develop gout or arthritis, but this has not been noted when only the liver extract has been used.

[1] Spence, J. C.: The Liver and Pernicious Anæmia, Newcastle Medical Journal, 1927–28, viii., 71.

SEVEN CASES TREATED AT THE MATER MISERICORDIÆ HOSPITAL, DUBLIN.*

Reported by Prof. HENRY MOORE, M.D., D.Sc.,
VISITING PHYSICIAN TO THE HOSPITAL.

SIX cases of pernicious anæmia have been treated with liver diet and one with liver extract (obtained from Messrs. Lilly and Co., Indianapolis, U.S.A., through the courtesy of Dr. Minot) according to the directions of Minot and Murphy. Of the seven cases two suffered from subacute combined degeneration of the spinal cord. All cases had a blood picture of pernicious anæmia and complete achlorhydria, as judged by the fractional test-meal. In each case, in addition to the liver diet or extract, 1 drachm of dilute hydrochloric acid (B.P.) and gr. 1 of pepsin (Parke, Davis and Co.) in a suitable mixture were given thrice daily after food, but no other treatment was used. The liver was always given cooked.

In five cases without nervous symptoms (other than paræsthesia in one) a remission occurred within three weeks of starting the treatment, as judged by the blood examination and clinical condition; improvement in the blood picture, appearance, comfort, and strength of these patients was evident within ten days or less and the remission has remained complete up to the present time, the treatment being continuously carried on. (See table.) Of the two cases of subacute combined degeneration of the spinal cord there was considerable nervous involvement and

Effect on Blood Picture.

Case No.	Period of observation: months.	Before and after treatment	Red cells per c.mm. in thousands	Hæmoglobin per cent.	White cells per c.mm.	Nervous involvement.
1	17	Before.	2350	69	4800	±
		After.	4690	90	7200	
2	15	Before.	1710	48	6800	0
		After.	5740	118	7200	
3	14	Before.	2650	45	8000	0
		After.	5380	106	8300	
4	11	Before.	1580	41	2100	0
		After.	5410	105	8400	
5	12	Before.	1670	52	5200	0
		After.	5980	118	8400	
6	18	Before.	3200	93	4800	+
		After.	3910	78	7400	
7	1	Before.	2590	60	6400	+
		After.	4660	95	5800	

* The pathological work in these cases was done by Dr. A. R. J. Dungan, pathologist to the hospital.

only a moderate anæmia in one (Case 6), and in this patient neither the nervous symptoms and signs nor the anæmia showed improvement, although the appearance and the general condition was improved; in the other (Case 7, liver extract) the moderate anæmia gave place to a complete remission, the rather marked nervous manifestations improved, and the general condition was markedly benefited during the 33 days of observation. In the last-mentioned patient (Case 7) paræsthesiæ of the hands and feet, which were troublesome before treatment, are now no longer felt; the gait, which was markedly ataxic, has become almost normal; and Romberg's sign, which was marked, has almost disappeared; on the other hand, vibration sense in the legs as well as the tendo calcaneus and knee-jerks are still absent.

The amount of liver ingested was 120 g. per day; the dose of liver extract was 7·5 g. per day (equivalent to 150 g. of fresh liver). At first the strict diet of Minot and Murphy was given in each case, but later the improvement was maintained by giving liver or liver extract alone in addition to an ordinary well-balanced diet.

One case was tested for disappearance of achlorhydria six months after a continuous remission had been established; the achlorhydria was still present and the pH of the gastric contents over a three-hour period showed no significant change as compared with the test before treatment commenced. Six patients showed a peculiar and rather pronounced ruddy complexion after the remission appeared as compared with the sallow complexion previously present. In six cases the glazed redness and furrowing of the tongue was much improved by the treatment, but atrophic papillæ were probably not restored to normal.

Summary of Results.

Put briefly, five cases of pernicious anæmia have been markedly benefited by the Minot-Murphy treatment and have maintained this improvement while still carrying on the treatment over 17, 15, 14, 12, and 11 months respectively; points of interest in these cases are the ruddy complexion of the face and the rather high red cell count and hæmoglobin content which were found when the remission was complete. One case with severe nervous symptoms benefited to a much less degree during a period of six weeks' treatment and one, also with obvious nervous involvement and treated by liver extract, had a complete remission within the month of observation. The latter two cases had signs and symptoms of subacute combined degeneration of the spinal cord and, in the former, the nervous condition showed no change, but considerable improvement in the signs and symptoms of cord degeneration was observed within 33 days of starting treatment in the latter. The case observed for 17 months still complains, as at first, of paræsthesia of the hands and feet, but this symptom is now much less troublesome than before treatment—apparently the progression of the degeneration of the spinal cord has in this patient been, so far, prevented.

Several cases of secondary anæmia of various kinds but not due to hæmorrhage were treated with liver diet, but no striking results were obtained.

FOUR CASES TREATED AT MERCER'S HOSPITAL, DUBLIN.

Reported by Prof. L. ABRAHAMSON, M.D., F.R.C.P.I., PHYSICIAN TO THE HOSPITAL.

Of four cases of pernicious anæmia treated with liver diet three are apparently cured. The patient who died was moribund when seen and was unable to keep the liver down. No patient relapsed, but the liver is being taken still. Dose employed: 6 oz. per day. No simultaneous treatment, except that the patient has taken 15 minims of dilute HCl as well as the liver. This drug, along with iron and arsenic, had produced no improvement previously. The cases were typical in every way. In one case the red cells numbered 740,000 per c.mm. One case of severe secondary anæmia, in which the cause (uterine) had been removed, showed no improvement on liver. No evidence of disappearance of achlorhydria. Apart from the liver, no special diet was given. The liver was given in any way the patient desired, as a rule fried or grilled.

Public Health Services.

HOP-PICKERS' CAMPS: THEIR SUPERVISION AND SANITATION.

THE meeting and discussion arranged by the Royal Sanitary Institute on April 13th, appropriately at Maidstone, were concerned with the health of hop-pickers and the sanitation of the encampments they occupy during the few weeks of the hop-picking season.

The subject, introduced by a timely paper from Dr. Alfred Greenwood, medical officer for the county, is one which has exercised in an increasing degree the watchful anxieties of the health authorities for years past, and the general public has, until lately, probably been little aware of the difficulties which have had to be contended with to secure reforms in the conditions urgently calling for attention and remedy among the thousands of hop-pickers annually brought into the county from the poorest areas of south and south-east London and constituting an undisciplined host of between 70,000 and 100,000, mainly women and children. The arrangements, or the lack of them, in the majority of encampments attached to the hop-fields were for many years truly deplorable and a source of real danger alike to hop-pickers and residents in the vicinity, from overcrowding in the huts and the want of adequate latrine accommodation or decent provision of even elementary sanitary precautions. As evidence still fresh in the memory may be cited the severe epidemic of typhoid fever at Maidstone in 1897, traced to stream pollution from a hop-pickers' camp, and the risk of a similar occurrence is yet present. It is a matter of much concern and no little discredit, as Dr. Greenwood revealed in his paper, that measures of reform are still needed in quite a number of encampments at the present day. His disclosures come at an opportune moment, well in advance of the hop-picker's arrival, with time yet to ensure that the by-laws, too often honoured in the breach than the observance, may be successfully enforced during the coming season.

Encouragement is, however, to be found in the fact that as compared with the past there is now a good nucleus of hop-growers who have made a real study of the welfare of the hop-pickers in their employ and have achieved a great deal towards the provision of satisfactory accommodation, sanitation, and water-supply for the encampments, in some instances even beyond the requirements of the by-laws, and including personal attention to the need for treatment in cases of sickness and accident. These are, however, in a decided minority and there is no avoiding the evidence that conditions still exist in many of the encampments which are the very reverse of satisfactory, due maybe in part to apathy and indifference of the hop-growers themselves, in part to the too lax administration of the by-laws by the councils responsible in certain districts, the machinery for enforcing which, Dr. Greenwood pointed out, exists, but is not made use of to avert overcrowding and to ensure proper sanitation in the camps. By way of remedy it was suggested that future legislation should include camp registration and the issuing of licences only to those hop-growers who were able to satisfy the authorities concerned that the accommodation and sanitary conditions were adequate. It was further proposed that there should be a joint controlling committee of the Ministry of Health in collaboration with representatives of the local councils, boards of guardians, and voluntary organisations, which at present act independently of each other.

In addition the steady if gradual education of the poorer classes in matters of rudimentary hygiene and sanitation should be aimed at as a means of assisting the desired improvement. In this connexion the coöperation of the South London borough medical officers and health visitors might with advantage be enlisted for health instruction in the home of the hop-picker, preparatory to the exodus to the hop-fields At present matters are left too much to chance and the personal ideas of some of the hop-growers as to what will barely suffice. There is little doubt that efforts to secure reform by the health authorities have in some districts met with strong opposition, even abuse, through the stubborn obstacles of vested interests, obstructive control of the local press, and the apathy of district councils, in the face of which the medical officer's task has been no enviable one. Memories of camp life during the war recall to the sanitary officer the formidable difficulties attending the carrying out of sanitary measures, particularly among our Allies in the Near East. There was, however, the provision of a working squad to be relied upon and disciplinary power to act. In the case of the hop-pickers' encampments, the institution of a sanitary squad might be a step in the direction of improving the camp hygiene.

In helping the solution of the problem of treatment for the many cases of sickness and accident, which inevitably occur among the large numbers of hop-pickers each season, a great debt is owing to the voluntary organisations and private effort of individuals. Notably is this so at Marden, some ten miles from Maidstone, where, thanks to the unceasing energy and generosity of Mr. and Mrs. J. A. Spender, the Hop-pickers' Hospital with 11 beds and a medical centre was opened in 1924 and has since proved an immense local boon during the hop-picking season. No fewer than 3021 cases were treated by the staff of two lady medical officers and nine sisters and nurses last season. The cases included many severe burns, various accidents, 17 cases of pneumonia, and a few of infectious disease. Thirty-four were admitted as in-patients during the four to five weeks and 20 were transferred to London and local hospitals. It is certain, however, that similar centres are much needed in other districts.

The Ministry of Health has been actively concerned in the question of securing reform of the hop-pickers' encampments and in 1925 instituted an investigation of their state, which resulted in a special report by Dr. A. C. Parsons. It is therefore to be hoped that the further ventilation of the subject at the recent meeting at Maidstone will stimulate the active coöperation of all the authorities concerned to secure a considerable measure of improvement, and the attainment of a satisfactory standard of camp accommodation and sanitation in the districts where most needed.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 14TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 321 (last week, 318) ; scarlet fever, 1646 ; diphtheria, 1117 ; enteric fever, 57 ; pneumonia, 1533 ; puerperal fever, 49 ; puerperal pyrexia, 120 ; cerebro-spinal fever, 8 ; acute poliomyelitis, 2 ; acute polio-encephalitis, 4 ; encephalitis lethargica, 33 ; dysentery, 60 ; ophthalmia neonatorum, 118. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 21 counties: London, 7 ; Bedford, 3 ; Derby, 10 ; Dorset, 1 ; Durham, 80 ; Essex, 4 ; Gloucester, 1 ; Kent, 1 ; Lancaster, 35 ; Leicester, 1 ; Lincoln, Parts of Lindsey, 8 ; Norfolk, 2 ; Northumberland, 9 ; Nottingham, 11 ; Salop, 1 ; Stafford, 4 ; Warwick, 4 ; Yorks, North Riding, 3 ; West Riding, 100 ; Glamorgan, 17 ; Monmouth, 19.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on April 17th–18th was as follows : Small-pox, 11 under treatment, 3 under observation ; scarlet fever, 1550 ; diphtheria, 2288 ; enteric fever, 34 ; measles, 1535 ; whooping-cough, 146 ; puerperal fever, 16 (plus 14 babies) ; encephalitis lethargica, 66 ; "other diseases," 26. At St. Margaret's Hospital there were 13 cases of marasmus, and 13 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (0) from enteric fever, 143 (82) from measles, 4 (1) from scarlet fever, 45 (16) from whooping-cough, 39 (8) from diphtheria, 38 (12) from diarrhœa and enteritis under two years, and 85 (9) from influenza. The figures in parentheses are those for London itself.

Of the 61 fatal cases of measles outside London, 6 were reported from Sheffield, 5 each from Croydon and Tottenham, and 4 each from West Ham and Walthamstow, while the figures in Edinburgh, Glasgow, and Dublin for the same week were 2, 5, and 3. Of the 29 fatal cases of whooping-cough outside London 11 were reported from Liverpool.

The number of stillbirths registered during the week was 329 in the great towns, including 48 in London.

Special Articles.

MEDICINE AND THE LAW.

Coroner and Medical Status.

THE death within a few minutes of admission to St. Giles Hospital, Camberwell, of a patient transferred by ambulance from Guy's Hospital, has given rise to some correspondence between the coroner for South London, who conducted the inquest, and the House Committee of Guy's. The patient, when still conscious, was seen at Guy's by a house surgeon, and diagnosed as cerebral hæmorrhage, but since only one bed was available, arrangements were made for the admission of the patient elsewhere. The autopsy showed that death was due to an extensive cerebral hæmorrhage ; in the opinion of the doctor who performed it, the patient would have died in any event, but the jolting of the ambulance would intensify the hæmorrhage. The jury returned a verdict of death from natural causes, absolved the house surgeon from blame, but considered that a system whereby patients were transferred from one hospital to another on the opinion of one doctor, "and that a junior house officer," was "gravely unsatisfactory," and suggested that two resident medical officers should see the patient and sign the removal papers. They desired that their opinion should be notified to the hospital authorities and the coroner, in forwarding the message, spoke of "regrettable occurrences of this kind."

In a considered reply the hospital authorities note and concur with the view that no blame attaches to the house surgeon ; they strongly dissent from the implication of the second part of the rider, that the coroner or any other legal authority has the right to decide whether this or that medical practitioner is qualified to perform any particular medical service or operation. Their position is that if a duly qualified practitioner examines and treats a patient with proper care, he should not be criticised on grounds of juniority or of his particular medical qualification. His competence is vouched for by the General Medical Council. The fact that most careful consideration of the qualifications of a candidate precedes his appointment to the coveted post of house officer is mentioned, though in our opinion this fact is not directly relevant to the question at issue. The suggestion that two hospital medical officers should have to sign removal forms would discriminate unduly between them and practitioners outside the hospital who have frequently to decide to transfer patients from their homes to institutions. Moreover, transference from one to another institution may be desirable when the case is in no way acute or dangerous. The House Committee show how

nconvenient and oppressive in many directions would be the results of adopting the recommendation made. The profession would, we agree, object to such a limitation being put upon the discretion and responsibility of individual practitioners.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Recent Research on the Vitamins.

THE Committee on Nutritional Problems of the American Public Health Association publish in the current journal a report that is not merely a supplement to but in some sense a revision of their report published six years ago. The main advances of the intervening years have been made not so much in the pure chemistry of the vitamins as in the knowledge of their nutritional relationships, their significance to health, and their distribution among food materials. New vitamins have been recognised: fat-soluble D, or the antirachitic vitamin; fat-soluble E, the vitamin of reproduction, and the two parts of vitamin B. The committee propose that these two parts shall be separately named F and G, leaving B as the name for the "complex," which may contain several other factors. F, they say, will be readily associated with the name of Funk, who has been a pioneer in the recognition of the antineuritic substance, and G with the name of Goldberger, who believes this factor to be preventive of pellagra. (It has often been written PP in the literature of this country.) The committee point out that the popularity of vitamins has led to commercial exploitation. There is at present no standardisation of the numerous preparations sold at high prices through the drug trade, and claiming to contain one or more of the vitamins in more or less concentrated form. While physicians may occasionally have use for such preparations, "the public will find it much safer and more economical to obtain vitamins as normal constituents of a wisely chosen food supply than from the drug store, whether in the form of pills, powders, or extracts." On the other hand, the committee are not impressed by those who claim that the average man gets plenty of vitamins and to spare. The optimal intake of vitamins is apparently, in view of recent investigations, many times greater than the amount necessary to protect us from manifest deficiency disease. One may take too many calories, but not, it seems, too many vitamins. It is necessary therefore to choose food with care and to guard the vitamins in our raw material from needless destruction by the cook.

Vitamin A.

Xerophthalmia is not the only ill-result of a deficiency in vitamin A. The principal change found in rats suffering in various degrees from this deficiency is "transformation of various epithelia into a stratified squamous keratinising epithelium. This change is practically constant in the upper respiratory tract, including the whole of the nasal passages, larynx, trachea, and bronchi." Vitamin A is regarded by the committee as more seriously neglected in our diet than any other vitamin. This on several grounds: so many staple foods are poor in the vitamin; its deficiency results in such a variety of damage to the human organism, and the differences in food habits which closely affect the health and longevity of the public are so familiar as to be regarded with indifference. The capacity for and the importance of storage of this vitamin are emphasised in recent research. This is an additional argument in favour of ingesting all the vitamin A that a wise choice of foodstuffs can supply. It has been shown that a supply of vitamin A which is sufficient to support normal growth and maintain every appearance of good health for a long time may yet be insufficient to meet the added demands of reproduction and lactation. The committee lay stress also on the increased susceptibility to pulmonary infections which results from deficiency of this vitamin, pointing out (1) that the breakdown occurs at the age corresponding to that at which pulmonary tuberculosis so often becomes manifest in man, and (2) that the content of vitamin A in pulmonary tissues varies directly with that in the food ingested. The vegetable sources of this vitamin can be well recognised from the parallel occurrence of chlorophyll. Of animal sources milk is probably the most important. The committee repeat a former recommendation that one quart daily for children, and one pint daily for adults is a minimal allowance. Liver is the best flesh food from the point of view of vitamin A, since it is in the liver that storage chiefly takes place. A varying amount of the vitamin is also found in adipose tissue. Heating at reduced acidity or slight alkalinity (about pH 9), which is very destructive to B and C, is almost without effect on A, and in general it may be said that this is a stable vitamin and can be relied on to retain its virtue despite the culinary processes of civilised living. Further reports are promised on the other vitamins.

CO as an Industrial Hazard.

While your Government is inquiring into the danger of lead ethyl, our public health service is investigating another older and probably greater hazard of the motor industry, the risk of carbon monoxide poisoning from exhaust gases. The risk of running the engine in a small closed garage is well recognised, and yet each year as the cold weather comes on our newspapers are filled with tragedies resulting from this very cause. The evil, however, appears to exist in larger garages, and even to some extent in the streets of our largest cities without arousing suspicion, or leading to due precautions. The accepted standard of risk in this country is that laid down by Prof. Yandell Henderson of Yale during the calculations made for ventilating the new traffic tunnel beneath the Hudson river from New York to New Jersey. Dr. Henderson pointed out that the risk is a product of the time of exposure and the concentration of the gas, and expresses the degree of risk in the following formulæ where "t" is exposure in hours, and "c" concentration of CO, in parts per 10,000:—

$t \times c = 3$	No perceptible effect.
$t \times c = 6$	A just perceptible effect.
$t \times c = 9$	Headache and nausea.
$t \times c = 15$	Dangerous.

Thus an exposure of 12 hours to a concentration of 1·2 parts per 10,000 or an exposure of eight hours to a concentration of 2 parts per 10,000 may be considered dangerous. That such exposures are not at all infrequent has recently been shown by J. J. Bloomfield and H. S. Isbell,[1] who made 250 analyses of air taken in 14 of the largest cities in this country. Of the samples taken in city streets 24 per cent. showed a concentration of more than 1 part per 10,000, but in only one case (under a covered passage way) was the concentration as high as 2 parts per 10,000. The chief risk here is to traffic officers, and it has already been shown that eight hours point duty may result in a carboxyhæmoglobinisation of 30 per cent. of the blood. The risk in garages, however, appears to be much greater. Here engines may be left idling while the "mixture" is varied in search of an optimal concentration. Such procedures often result in a very rapid rise of the CO concentration. The average of 102 samples taken in garages showed a CO concentration of 2·1 parts in 10,000, while 18 per cent. of the samples showed a concentration over 4 parts per 10,000. The investigators add that "had these tests been made during cold weather, no doubt the carbon monoxide would have reached higher concentrations."

In one repair shop a very simple ventilating device was in operation. A flexible hose was connected to the exhaust pipe and remained there while the engine was running. The exhaust gases were conveyed by a flue to the roof. The efficacy of the apparatus was tested and it was found that while it was retained the concentration did not rise above 0·7, but when the

[1] Public Health Reports, March 30th, 1928, p. 750.

engine was allowed to run for the same length of time without the hose connexion the garage air at mouth level was found to contain 2 parts per 10,000 of CO. It is recommended that no engine should be allowed to run in a repair shop for more than 30 seconds, except in driving in or out of the shop, unless some arrangement has been made for removal of exhaust gases. In practice probably the simplest legal restriction is that adopted by the city of Chicago, where the municipal code requires that the air of garages shall not exceed 2 parts of CO per 10,000 of air.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

The Dail and Compulsory Vaccination.

Mr. Everett, one of the deputies for County Wicklow, has introduced to the Dail a Vaccination (Amendment) Bill which, if passed, would render vaccination laws in the Irish Free State identical with those in England. Hitherto there has been no conscientious objection clause in the Irish law on vaccination. The Bill has received support from a number of members of all parties, although strongly opposed by the Minister for Local Government and Public Health. In opposing the second reading, the Minister (Mr. R. Mulcahy) said that there was no body of medical opinion in favour of the Bill, and that the official medical bodies had passed strong resolutions in favour of the existing vaccination laws. Their experience had been that the present Vaccination Act was justified, and that such modification as had been made in England had brought about the really disastrous position that at present existed in regard to small-pox. In any outbreak of small-pox in this country there was an additional danger in the fact that a very small percentage of their medical men had any experience of the disease. The Minister had the unanimous support of the medical deputies in the Dail, regardless of party.—Dr. P. J. O'Dowd said that the reason they had not small-pox in Ireland was because of the success of the compulsory vaccination clause.—Dr. V. White said that he could not see how the man in the street could acquire the scientific knowledge qualifying him to express an opinion on vaccination.—Sir James Craig said that they should do something to protect children who were not able to study the matter themselves and who would be the people to take small-pox if an epidemic broke out. They had been told there was a conscience clause, but the conscience clause had resulted in 15,000 cases of small-pox last year in England.

Death of the Medical Officer of Health for the City of Cork.

The death of Dr. J. D. Carroll, medical officer of health for the City of Cork, which occurred last week at the age of 38, is a loss not only to Cork but to the whole public health service of the Irish Free State. He was a man of exceptional ability and energy and was looked on as one of the most promising recruits to the public service in recent years. He had only been appointed to his office last year, but already had made his influence felt in many directions. Born in Dundalk and educated at Clongowes Wood College and University College, Dublin, Carroll took his medical degrees in 1913. He joined the Royal Army Medical Corps in 1914 and served in Gibraltar, Malta, Egypt, and France, where he won the Military Cross. After the war he took up public health work and served for some time as school medical officer under the London County Council. In 1922 he was asked to organise the sanitary work of the Free State Army. He held the post of chief sanitary officer until September, 1925, when he was awarded a Rockefeller Fellowship for the study of public health work in the United States. Personally, Dr. Carroll was held in great affection by all who knew him. As a gallant officer, as a sportsman, and as a man of science he had made his mark, and a great and useful future was expected for him.

Correspondence.

"Audi alteram partem."

HAS THE CAMPAIGN AGAINST VENEREAL DISEASES BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—Mr. Johnston Abraham has very accurately put his finger upon one of the main weaknesses of the present scheme—viz., the extreme difficulty in adequately treating a person suffering from gonorrhœa. Such a patient must in treatment face much inconvenience, discomfort, tedium, and uncertainty. Undoubtedly the ideal treatment of gonorrhœa lies along in-patient lines; but in civil life this is, for obvious reasons, impracticable in the vast majority of cases. In my experience few syphilitics default while in the infectious stage. The urgent problem to be solved is the defaulter suffering from gonorrhœa.

The practical treatment of the disease must remain in the out-patient category, and this can be divided into two classes: (1) where the facilities available approximate in some degree to in-patient treatment, and (2) where they do not. Apart from actual confinement to bed the ideal out-patient treatment of gonorrhœa—in class (1)—is where the patient can be treated every day, several times a day, and at hours of his or her own choosing. Such facilities are not available in the V.D. section of the general out-patient department of the average hospital, and in consequence the results are unsatisfactory, the patient progresses but slowly and tends to become a defaulter. Where a clinic is held, say, on two days a week with intermediate treatment available daily for two hours, it becomes impossible, if patients are seen in any numbers, to give them that individual study, care, and attention, upon which success almost entirely depends. There is neither a sufficiency of time nor of staff to administer adequate treatment. This operates very hardly upon female cases. The routine in the municipal clinic of the city of Salford is that women receive intermediate treatment by the nurse, at least once daily, and in addition each receives treatment by the medical officer on alternate days. To tell the average female patient to douche at home or to provide the male patient with a syringe for home use, is merely putting into their hands ideal instruments for wreaking havoc in their genito-urinary passages. Without a tremendous amount of continuous hard work by M.O. and nurse the treatment of gonorrhœa in a V.D. clinic is almost futile. Enthusiastic devotion to the interests of the patient should be the keynote of the clinic. It is an institution that must place itself at the service of the patient. Where the occasional and part-time V.D. clinic is merely a side-line to the out-patient department of a hospital, the chief essentials for securing regular attendance of the patient and rapidity of cure are wanting.

While in full agreement with the efforts of the cities of Edinburgh and of Glasgow to secure some measure of compulsory power over the V.D. non-attender, I do consider that a great deal of defaulting can be combated by instituting, in areas where the population warrants, whole-time ad hoc clinics, which are open continuously for 12 hours daily. The ad hoc clinic, since it is worked by a whole-time staff specially trained in venereological methods, and is equipped for the sole purpose of diagnosing and treating venereal disease, is an institution placing itself at the entire disposal of the patient for 12 out of the 24 hours. It alone can make any approximation to in-patient methods of treatment. The stream of patients, instead of being concentrated into two or three hours on certain days, is distributed throughout the day and week. The result is that the individual receives a personal attention, impossible under the other system. The theoretical objection that patients are shy of attending an ad hoc clinic is not borne out by experience. They appear to prefer it.

But even the whole time ad hoc clinic cannot pull its full weight or turn out the best work unless it possesses sufficient beds. A certain number of these should actually be in the clinic, and not at some other institution. Money spent on proper in-patient accommodation is well invested. The minimum satisfactory arrangement consists in having bed accommodation for 10 per cent. of annual new patients. Half these beds should be at the clinic, and half at a hostel for the treatment of children and pregnant women.

The campaign has not failed, although it has not yet been completely successful. The attack is not finished nor is it exhausted. It can be reinforced in two ways: (1) by introducing an element of compulsion, and (2) the provision of whole-time ad hoc treatment centres in large cities to replace the part-time clinics at present attached to hospital out-patient departments.

I am, Sir, yours faithfully,

E. TYTLER BURKE,

V.D. Medical Officer for the City of Salford.

April 23rd, 1928.

To the Editor of THE LANCET.

SIR,—Mr. Johnston Abraham suggests that the answer to the question at the head of his letter is in the affirmative, but I venture to think that the official campaign as supported by the Ministry of Health has been successful to a limited degree in regard to syphilis, although it has failed (as it was bound to fail) in regard to gonorrhœa, which can easily be prevented in the male and so indirectly in the female; but once having developed it remains in an infective state for an indefinite period.

Mr. Abraham refers to the excellent "Statement for the Corporation," issued by the Edinburgh Public Health Authorities in February last, in connexion with the Edinburgh Corporation Bill, that was refused a second reading in the House of Commons on April 19th, by a majority of 63 in a House of 253. This statement (in para. 2) affirms "both syphilis and gonorrhœa are preventable diseases" and "both are curable if treated early and efficiently." As pointed out by Dr. J. H. Sequeira on many occasions in the past, the two aspects of the antivenereal campaign must not be confused, the first and more important being the public health infectivity aspect and the second, less important, aspect being that of the *cure of the individual*. The effect of preventive or curative measures on the period of infectivity and on cure must, therefore, be considered separately. It is axiomatic that if infection by a disease is prevented by any method of hygiene or disinfection the question of infectivity does not arise. If, however, the infection has not been prevented steps must be taken, first, to prevent the infection being passed on and to limit the period of infectivity as much as possible, and secondly to cure the infected individual.

As regards syphilis, these two desirable objects are secured by the administration of injections of arseno-benzol compounds, and the individual ceases to be actively infectious, certainly after three injections given at intervals of three days. The clinic system of free and efficient treatment has, therefore, been successful in very greatly reducing the incidence of syphilis. With gonorrhœa, however, the cure of obvious signs and symptoms of disease in the individual does not entail any even temporary absence of infectivity. The patient may feel perfectly well and exhibit no symptoms that cause him or her any uneasiness or anxiety whatever and yet may remain in an acutely infectious condition. It is not, therefore, astonishing that the clinic treatment system has failed in regard to gonorrhœa.

The speakers in the debate on the Edinburgh Corporation Bill who opposed the second reading rightly pointed out that it was impracticable to insist upon compulsory treatment until cure was effected, as there would be very wide divergence of opinion amongst medical practitioners as to when this point had been reached; but the opposers of the Bill apparently had not noticed that an alternative to cure had been given in the following words, which ran: "or until it has been certified that he is unlikely to cause infection." The words "continue such treatment until he is cured" could well have been struck out by an amendment, as the whole of para. (3), clause 3, dealing with detention in hospital had already been struck out. If it had been considered inadvisable in view of differences of opinion as to period of infectivity to permit the alternative mentioned above to remain, a minimum of treatment might have been made compulsory such as "one year's treatment for syphilis and three months' treatment for gonorrhœa." Although such a minimal course of treatment would not always be satisfactory, a considerable majority of cases of gonorrhœa would be rendered non-infectious, and the chance of even remote relapse to infectivity in syphilis would be small. I think the majority of infections with both syphilis and gonorrhœa result from intercourse with an individual who has not submitted to even such a minimal course of treatment.

It seems a matter for regret that the Bill was not given the opportunity of full discussion in Committee, as, though many of the objections raised by the medical opponents of the Bill were weighty, these objections might quite possibly have been met by amendments, and an Act put on the Statute Book which would have afforded a most valuable experiment under exceptionally favourable circumstances. Personally, I am of opinion that early and efficient treatment, whether voluntary or compulsory, will, in time, reduce syphilis to the position of a rare disease, but will never have any very marked effect on the diminution of gonorrhœa, which will only be achieved by the education of the male public in immediate self-disinfection after risk.

I am, Sir, yours faithfully,

H. WANSEY BAYLY.

Harley-street, W., April 23rd, 1928.

To the Editor of THE LANCET.

SIR,—I do not agree with Mr. Johnston Abraham's statement in your issue of April 21st (p. 834) in connexion with the treatment of gonorrhœa that we have nothing in our armamentarium comparable to arsenic in syphilis. Preparations of silver and permanganate of potash are as effective in gonorrhœa as arsenic is in syphilis so far as the respective micro-organisms are concerned. It is the technique of treatment that is at fault. By this I mean irrigation per urethram. I have found injection of the vas absolutely reliable in dealing with every stage of the disease. I am, Sir, yours faithfully,

Harley-street, W., April 23rd, 1928. J. F. PEART.

To the Editor of THE LANCET.

SIR,—Your annotation on venereal disease control (THE LANCET, April 21st, p. 821) in the light of Dr. J. H. Stokes's article and the possible help he might give us with regard to Edinburgh, if he would develop his experiences of "the strong arm of local public health officials," should, I think, be followed up.

I had the opportunity, about five years ago, of talking over these matters with several of the local public health officials in some of the important cities in America. I am inclined to think that the "strong arm of local public health" bears a relation to what Dr. Stokes speaks of as "inadequate follow-up." The syphilis clinic relies on two things: (1) social service, (2) the strong arm of the local public health officials. The results are, according to Dr. Stokes, that no higher proportion of patients can be kept under observation than from 20 to 40 per cent.

Compare this with Edinburgh, where, without the strong arm of local public health, they keep under observation and treatment 71 per cent. of the patients; or compare the results in Holland, where an entirely voluntary system is in practice. The Chief Medical Officer of Health for Amsterdam made the following statement in 1925: "At Amsterdam, thanks to the devotion of doctors, nurses, and the social worker

attached to the policlinic, we have obtained this remarkable result, that 95 per cent. of the syphilitic men and 85 per cent. of the women have remained continuously under treatment at the clinic and policlinic during the two years that this system of collaboration has been established. These figures are certainly not surpassed by those obtained in countries where compulsory treatment is in force."

It is probable, I think, that the American compulsory measures are really responsible for the "inadequate follow-up," for where it is known that compulsory measures *may* be used, there is a greater incentive for patients to give false names and addresses. It would seem, from results given above, that we may learn more from Holland than from America. I am, Sir, yours faithfully,

Oxford, April 24th, 1928. HENRY T. GILLETT.

INJECTION TREATMENT OF VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—Having practised the injection treatment of varicose veins over a long period, we have read with interest the paper by Mr. Rodney Maingot and Mr. C. Hope Carlton in your issue of April 21st. Whilst appreciating their work in furthering the use of a new and approved treatment of varices, we find ourselves unable to agree with them upon certain details of technique.

Position of the Patient.—Except in the treatment of the smallest varices we have long abandoned the erect and sitting postures owing to the increased venous tension which they produce. We prefer to keep the patient completely recumbent, either prone or supine, and to inject the veins in the collapsed state which then exists. The technique is admittedly much more difficult when this position is adopted, but efficiency is rapidly acquired and the advantages are definite. In the first place, a smaller quantity of sclerosing fluid is required and it comes into intimate contact with the entire endothelial circumference of the vein, thus securing more certain irritation and sclerosis. Secondly, the tendency to bleeding and leakage into the tissues is reduced to a minimum; and finally, in dealing with nervous patients, the recumbent position causes less anxiety both to the operator and the subject.

Method of Inserting the Needle.—Unlike Mr. Maingot and Mr. Carlton, we get better results by piercing the varix directly than by entering the needle obliquely so as to produce a valvular opening in the vein. The secret of controlling leakage after injection is to apply firm digital pressure over the site of puncture, and when the aperture in the skin is situated directly anterior to that in the wall of the vein it is much easier to secure correctly directed pressure than when the apertures are at some distance apart. In any case, by employing direct puncture in treating all our varices the instances of pigmentation and ecchymosis which have been met with do not approach the average 10 per cent. reported by Mr. Maingot and Mr. Carlton. In our opinion it is not back-flow which provokes necrosis and ulceration, but paravenous injections and those made into bluish, superficial veins whose walls have been reduced to a mere pellicle; these unhealthy walls are unable to withstand the distension consequent upon the introduction of concentrated irritant fluids into their lumina.

Amount of Sclerosing Fluid.—After stating the quinine and sodium salicylate formulæ which they prefer to employ, Mr. Maingot and Mr. Carlton mention that "not more than 15 c.cm. should be given at one sitting." It is not clear whether this quantity of fluid is to be considered in terms of salicylate or quinine, but, if the latter, then it is easy to account for the instances of giddiness, fainting, tinnitus, and general abdominal pain which they place on record. 15 c.cm. of the quinine bihydrochloride solution mentioned represent an intravenous dose of roughly thirty grains of quinine. In treating a comatose malarial patient it is considered a heroic measure, faced with the risk of quinine poisoning, to administer fifteen grains of this drug intravenously, and we feel that in spite of the recognised alteration of the blood flow in varices, the authors have been fortunate in avoiding more serious toxic symptoms in patients who have received the maximal dose of thirty grains at a single sitting. Especially in using 20–30 per cent. concentrations of sodium salicylate we are accustomed to employ fairly large injection; but never, in employing Génévrier's quinine formula as quoted by Mr. Maingot and Mr. Carlton, have we found it necessary to introduce more than 5 c.cm. at one séance. Following the advice of A. H. Douthwaite we limit our primary dose of quinine to 1 c.cm. in order to test the susceptibility of the patient to the drug. More important, however, is it to examine the subsequent venous reaction, a phenomenon which varies remarkably in different individuals. In one case injection of 0·5 c.cm. of standard quinine-urethane solution caused the entire obliteration of a varix extending from the thigh to the ankle, with tenderness and reddening of the superficial tissues which lasted for a week. Although the varix was a large one we tremble to think of the consequences which might have ensued in this case if an injection of 5 c.cm. had been made. This case also shows the fallacy of the statement by Mr. Maingot and Mr. Carlton that the vein becomes "thrombosed to an extent which varies directly with the amount of solution injected."

We are confident that, however massive or vermiform the clusters of veins to be sclerosed, the process if it is to occur, will best develop after injections of a standard quinine-urethrane solution not exceeding 1 c.cm. introduced into one or more segments. Larger amounts are superfluous if not actually harmful.

We are, Sir, yours faithfully,

KATHARINE M. CELLAN-JONES, M.B., B.S.
C. J. CELLAN-JONES, M.D., F.R.C.S.E.

Swansea General and Eye Hospital, April 21st, 1928.

EPILEPSY IN DEMENTIA PRÆCOX.

To the Editor of THE LANCET.

SIR,—In his Lumleian lectures Dr. James Collier makes the statement that "epilepsy is of common occurrence in dementia præcox" (THE LANCET, March 24th, p. 589). I should be interested to learn the source of his authority in making this assertion. In my experience, fits of any kind are of the rarest occurrence in dementia præcox, and, in the event of their appearance, it is a wise precaution to reconsider carefully the original diagnosis.—I am, Sir, yours faithfully,

THOMAS D. POWER.

Brentwood Mental Hospital, Essex, April 18th, 1928.

TONSILLECTOMY AND RHEUMATISM.

To the Editor of THE LANCET.

SIR,—My letter was not intended to be critical or controversial. Dr. Wilkinson and Dr. Ogilvie expressed doubt as to the sufficiency of the number of cases investigated to allow of any definite conclusion and I performed for them the necessary arithmetic to test that numerical sufficiency; in other words, to see whether the variations disclosed are sufficiently large to be beyond the range of a reasonable expectation of chance variation. The usual statistical criterion of numerical sufficiency is the "probable error," an unfortunate but conventional name for the range of variation which is equally likely to be exceeded, or not to be exceeded, by errors of sampling or what might be termed a "run of luck." When I gave the difference and probable error of the difference in the fatality rates between the tonsillectomy cases and the non-tonsillectomy cases as $4{\cdot}6 \pm 4{\cdot}8$, it signified that it is as likely as not, on purely statistical grounds, that such a difference is merely a matter of chance. Only when a difference is three times its probable error is it regarded as significant according to the usual convention. The smaller the number of cases the greater is the probable error of the rate founded on them. Actually I agree with Drs. Wilkinson and

)gilvie that tonsillectomy is likely to reduce the everity of cardiac complications, but this was not the oint under investigation by me ; it was the statistical dequacy of the numbers adduced to support the ontention that I was investigating.

My rearrangement of Table IV. was due to the rithmetical discrepancy that the numbers given in he two right-hand columns do not tally with the otal number given in the left-hand column, the children ith glands but no tonsils having been excluded, and reproduce the table from your issue of March 31st.

TABLE IV.—*Rheumatic Children.*

Heart condition.	Healthy throats.	Tonsils and glands.
	Number and percentage.	Number and percentage.
ormal (27 cases) ..	20 (74)	6 (20)
amaged (20 cases)..	9 (45)	9 (45)
iseased (24 cases)..	8 (33)	15 (62·5)

The paraphrase of " normal tonsils " for " healthy roats " was inadvertent. I was led into this error ecause in Table V. the 37 children with " healthy roats " are described as having the throat condition normal." But my paraphrase has led to the isclosure of the fact, not revealed in Table IV., at a number of the children with " healthy throats " ad had their tonsils removed. It would now seem at the cases included under the rubric " healthy roats " consist partly of children who have normal nsils and partly of children who have had their nsils removed, presumably on account of tonsillar sease. As this group is not homogeneous it is not ossible to draw inferences from it in the manner that attempted.

I fear that the conclusion must be on the usual atistical criteria that, though suggestive, the mbers of cases are insufficient to be beyond the ach of variations due to chance, however strong e clinical grounds may be for belief in the value tonsillectomy in rheumatic cases.

I am, Sir, yours faithfully,

C. O. STALLYBRASS,

April 21st, 1928. Asst. M.O.H., City of Liverpool.

UTANEOUS AND VISUAL HALLUCINATIONS IN THE CHRONIC HALLUCINATORY PSYCHOSIS.

To the Editor of THE LANCET.

SIR,—In connexion with the article by Dr. acnamara in your issue of April 21st it may be of some terest to mention a case of a similar kind which me under my notice at the Maudsley Hospital. is patient, like those of Dr. Macnamara, was a oman who had passed the menopause, and her skin nsations and the hallucinations and delusions sing therefrom were subject to marked fluctuations cording to the state of her general health and of the eather. She showed some evidences of thyroid ficiency, and under thyroid administration her skin came less dry and scaly, less sensitive to cold, and s irritable ; this seemed to react upon her mental ate, and although she never completely lost her lief that she was infected with vermin, it became ich less prominent and affected her conduct and otional state to a much slighter extent, so that she came more cheerful, and was able to resume social ntacts and her occupation of teaching music.

Since these patients are mainly elderly or middle-ed women it seems possible that thyroid and ovarian retions are deficient, causing dryness, scaliness, and itability of the skin which act as the basis upon ich hallucinations and delusions are formed ; the se mentioned above suggests that it is at least rth while to try the effect of glandular therapy on such patients.

I am, Sir, yours faithfully,

Lincoln, April 20th, 1928. MARY R. BARKAS.

SUBLINGUAL ABSORPTION OF MORPHINE.

To the Editor of THE LANCET.

SIR,—In an annotation in your last issue reference is made to the sublingual method of administration of morphine sulphate. It is stated that Dr. David Davis and Dr. David Ayman suggest the discontinuance of administration of the drug by this route. I have been using this method for many years successfully by simply placing a crusted tablet under the tongue, but I powder it first in cases of deficient salivation. Absorption by the sublingual gland takes place rapidly and the effect of the drug is satisfactory. I am employing the sublingual method with all the alkaloids almost exclusively in my practice, making use of hypodermic injections principally for the induction of local anæsthesia in surgical operations. If a patient accidentally swallows the tablet I repeat the sublingual administration. Much time is saved by this method, and asepsis is assured. Many years ago I published [1] my experience of the sublingual method, illustrating my remarks with selected cases. In one case—poisoning by carbolic acid—where swallowing movements were absent and the patient was moribund, the administration of apomorphine by the sublingual method produced vomiting. Whatever may be the explanation of the American findings I shall continue the sublingual practice with which for many years I have been highly satisfied.

I am, Sir, yours faithfully,

A. P. MURTZ.

Queen's-road, Finsbury Park, N., April 21st, 1928.

INVESTIGATION OF MATERNAL MORTALITY.

To the Editor of THE LANCET.

SIR,—The Council of the Society of Medical Officers of Health has had before it the letter appearing in the *Times* of April 3rd, over the signatures of certain obstetricians, as to the need for research into the above subject. The Council is in agreement that the research required calls for a close alliance between the physician, the biochemist, and the bacteriologist, and the close apposition of the laboratory to the bedside, but it is not of opinion that an investigation by local health authorities of all maternal deaths should be excluded or discredited, and the Council regrets that the signatories have seen fit to take this view.

The Council would further put on record that the signatories are in error in suggesting that a knowledge of the cause of a disease is necessarily a sine qua non for its prevention, and in this connexion would refer to the control of small-pox by vaccination ; the diminished incidence of enteric fever following on the betterment of sanitary and living conditions ; and the reduction of deaths from scarlet fever as the result of the measures taken by health authorities.

The Council of this Society feels that matters of this kind are best discussed in the professional journals.

I am, Sir, yours faithfully,

E. H. SNELL,

Acting President, Society of Medical Officers of Health.

1, Upper Montague-street, W.C., April 24th, 1928.

*** It is noteworthy that in Circular 888, issued this week by the Ministry of Health to local authorities, attention is called to a previous circular recommending an investigation in every area by an experienced medical officer of all maternal deaths and all cases of puerperal fever. The Minister regrets to learn that such inquiries have, so far, been adopted in very few areas, possibly because it has not been apparent to local authorities what practical results might follow. The Minister explains that the object is to obtain and study a mass of properly classified information as to the causes of death in a large number of cases, and to this end a Maternity Mortality Committee is to be set up at the Ministry. This

[1] Practitioner, 1916.

Committee will draw up a questionaire to serve as a guide in making the investigation, in order to secure uniformity of methods, will collate the information received from this and other sources, and will make suggestions as to further research or action. —ED. L.

APPEAL FOR SPONTANEOUS TUMOURS FOR STUDY.

To the Editor of THE LANCET.

SIR,—My researches have now come to a stage at which I can determine at will the regression of either implanted rat sarcoma, or carcinoma, by means of vaccine treatment. The rats so treated are thereafter immune to reinoculation with the tumour concerned. In order, if possible, to make further progress it is essential to discover whether similar results can be obtained with the spontaneously occurring tumours of mice, rats, guinea-pigs, rabbits, cats, or dogs. May I through your columns appeal to those who possess them to be so good as to send any tumour-bearing animals *alive* to me at the Lister Institute, London, S.W. 1. I will gladly pay any expense involved.

I am, Sir, yours faithfully,

April 18th, 1928. THOMAS LUMSDEN.

Obituary.

CHARLES GREENE CUMSTON, M.D. GENEVA.

IT is with great regret and a real sense of loss that many medical men in London will learn of the death on April 14th, at Montreux, of Dr. Cumston, who, though not the holder of any British qualification, was nevertheless a Fellow of the Royal Society of Medicine and a staunch admirer of the Royal College of Physicians of London.

Cumston, who was born at Boston, Massachusetts, in 1868, completed his early education at Vevey, and becoming ardently attached to Switzerland, pursued his medical studies at Geneva, graduating there as doctor of medicine in 1893 on the presentation of a thesis on subjects investigated in the laboratory of Prof. d'Espine, and marrying a Genevese lady who survives him and for whom—his inseparable companion during many years—great sympathy will be felt. After graduation, Cumston returned with his wife to Boston and soon won for himself a definite position as surgeon, chiefly interested in genito-urinary and allied subjects, and attached to several hospitals of importance. After 20 years or more of professional success in Boston, Cumston came back to Geneva, a year or two before the Great War, and though not entirely abandoning clinical interests, gave himself with increasing ardour to the study of the history of medicine, becoming privat-docent in the Faculty of Medicine and delivering yearly a course of lectures in his favourite subject. Here he accumulated a most excellent library concerning the history of medicine, and a really fine and beautiful collection of portraits—for the most part engravings and etchings of the historical heroes of medicine. He took a lively interest in the medical life of Geneva, participating in its social side and developing the activities of the Medical Society of that city, founding, in pious memory of two of his revered masters, the Julliard-Revilliod lectures, given annually by some foreign member of the medical profession. Here, too, in 1925, he had the great pleasure of presiding, in his own genial and kindly way, at the Fifth Congress of the International Society of the History of Medicine.

Latterly his health had somewhat failed, but several years ago he embraced eagerly the suggestion made to him by a friend that he should write in English a History of Medicine, and it was at once arranged that the volume should be included in the series known, under the editorship of Mr. Ogden, as the History of Civilisation. The book appeared in 1926, and has already achieved marked popularity and general success. By it Cumston's name will undoubtedly be remembered, and it is characteristic of the man. There have been and are many historians of medicine with greater technical equipment; there are others who are greater scholars, or who have made greater contributions to special departments of historical knowledge. But Cumston's book is a wide and generous survey of the subject, made by a man who had practised long and successfully as physician and as surgeon, and from whom nothing human was remote or alien. In fact, just as it may be said that one of his most successful "occasional papers" was a little essay, written in French, concerning "notre sympathique confrère François Rabelais," so was there much of Rabelais in Cumston.

Not that he was Rabelaisian in the sense in which the Englishman in the street understands the term, but that, like Rabelais a Hippocratic physician by nature and by training and, like him too, not without experience in a specialty that reveals a great deal of what is weakest and sometimes much of what is strongest in human nature, and with a wide knowledge of men and things, he became a great and kind-hearted observer and critic of life; impulsive and prejudiced, tolerant and wise, philosophical and genial, caustic and forgiving, and above all sympathetic to everything but what is mean and despicable. And it is perhaps not altogether fanciful to trace some resemblance between two portraits now before the writer—one, a copy of the famous Geneva likeness of Rabelais, the other, a recent crayon drawing by a Genevese artist of "notre sympathique confrère" Charles Greene Cumston.

F. G. C.

UNIVERSITY OF LONDON: *Prizes and Grants.*—A Carpenter Medal, together with a money prize, of the value of £20 in all, will be awarded by the Senate in 1928 for a thesis of exceptional distinction in statistical, genetic, comparative or experimental psychology, including the functions of the central nervous system and special senses, for which a doctor's degree (other than the Ph.D. degree) has been awarded during the period of three years ending on May 31st, 1928; applications before June 9th, 1928. The Senate will proceed shortly to consider applications, to be made before May 15th, 1928, for grants from the Dixon Fund, which are allocated annually for the purpose of assisting scientific investigations. Applications for grants from the Thomas Smythe Hughes Medical Research Fund, which are allocated annually for the purpose of assisting original medical research, should be sent in before June 15th. Further particulars of these prizes and grants may be obtained from the Academic Registrar.

The Laura de Saliceto Studentship for the Advancement of Cancer Research (value £150 a year), is a part-time appointment and may be held in conjunction with an appointment in a physiological or pathological laboratory or with a clinical appointment affording special opportunities for the study of cancer. It will be awarded for not less than two years and may be extended to a total period of five years. A candidate for the studentship may be of either sex and need not be a member of the University. He must submit to the Academic Registrar, not later than July 2nd, 1928, a statement of his qualifications, and give two referees.

Medical Graduates Society.—Sir Berkeley Moynihan will preside at the first annual dinner and meeting of members of the society, to be held at the Langham Hotel, Portland place, London, W., at 7.30 P.M., on May 8th. Any medical graduate of the University of London can join the society by sending a life subscription of £1 to the hon. treasurer, Mr. W. McAdam Eccles, 124, Harley-street, London, W.1.

ROAD ACCIDENTS IN 1927.—A return which has just been issued by the Home Office shows that in Great Britain last year 5329 persons were killed in street accidents caused by vehicles, against 4886 in 1926. The injured numbered 148,575, against 133,888. Motor-cycles were the most productive of accidents. They caused 1380 deaths and were responsible for injuries to more than 41,000 people. The highest accident risk is in London and the Home Counties. In London itself, last year one person in 1 was injured in a road accident, against one in 193 in Liverpool, one in 212 in Birmingham, and one in 244 in Manchester. In the Home Counties the proportions were: Essex, one in 172; Surrey, one in 217; Kent, one in 242; Herts, one in 248. At the same time the National Safety First Association points out that, in relation to the number of motor vehicles, the increase is the lowest since the war.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Edinburgh Corporation Bill.

In the House of Commons on Thursday, April 19th, the motion for the second reading of the Edinburgh rporation Bill,

Mr. Pethick-Lawrence moved the rejection of the Bill. ıough it came before the House as a private Bill this easure, he said, raised public issues of fundamental tional importance. They were all agreed as regarded e grave injury that was brought by venereal diseases the health and life of the community and as to the vital cessity for taking steps to eradicate them by every possible ans. The opponents of this measure, however, differed m the promoters as to the method to be adopted. The omoters believed that compulsion was the best means achieve the end which they all desired; the opponents, the other hand, believed that compulsion would have cisely opposite results to those which the promoters ıtemplated. Grave as was the infringement of individual erty involved by this Bill, he would be willing to tolerate f he really thought that the enactment of such a measure uld get rid more speedily of this disease throughout country. He was convinced, however, both by experi- e and a common-sense view of human nature, that the ct reverse would be the case.

A Hybrid Bill.

The Bill as put before the House was of a somewhat brid character. Concurrently with the text, the promoters l circulated a memorandum in which they proposed tuitously to make very considerable amendments. He s rather suspicious of these modifications so gratuitously red. But in whatever form the Bill was presented he nd it objectionable. The promoters said that it was essary to provide compulsion in order to catch defaulters. y had large numbers of people coming voluntarily for atment, but they found that before the treatment had n fully developed and a cure completely effected a tain number defaulted, and it was contended that if y they could introduce the principle of compulsion they ld oblige those who came for treatment to continue until cure was complete. The mistake in regard to that view s that they could not isolate the question of default; y could not graft compulsion on to the voluntary system. ital issue which the House had to realise was the extent which compulsion would cut off the supply of patients. uld anyone with any knowledge of human nature doubt t if this Bill became law volunteers would be considerably uced in number? Those who came forward would know t they would have to submit to the treatment whether y liked it or not. Perhaps they would have to submit hey went to a clinic to such a doctor as was prescribed them and they would have to continue the treatment il what was called a cure was effected. He appealed he medical men in the House to say whether any two lical men would agree exactly as to when a cure was cted. If that were so, from the patient's point of view, treatment might be continued almost indefinitely. consequence large numbers of patients would hesitate to e forward. Further, they all knew that in every form reatment there was a certain element of risk and danger, it might well be that certain unfortunate events would ur in certain cases. If that should get about the osition to coming for treatment would be very much ter still. But there was another vital question—ely, at what stage would the patients offer themselves reatment. At the present time patients in many cases e in the very early stages of the disease. Of 19,000 nteers over 4000, or something like 22 per cent., were d not to be subject to the disease at all. If, as a result is Bill, people postponed coming forward for treatment, might do so until some of the most important oppor- ties for dealing with the disease had gone. Moreover, ng the interval, they were very likely to consult quacks use they would hope in that way to escape the full rs of the complete treatment. Was it contended that e who were compelled to undergo treatment would e up in numbers for the falling-off of those who came ntarily? They would not belong to the well-to-do es, because the well-to-do would consult their own ate medical practitioner, and as there was no compulsory ication under the Bill, their cases would not be notified. as only the poor who were going to be dealt with. They going to be informed against by the Medical Officer of th or by a medical practitioner. But where was the cal practitioner going to get his original information? it suggested that he was going to get if from anyone chose to come and believe that he or she had been ted by the person in question? That, surely, was too preposterous to be believed. Or was the medical practitioner going to get it elsewhere from his own personal observation in hospital or clinic? If he was going to get it in the second way, was it not patent that that would have a very deleterious effect on men and women coming voluntarily to be treated in hospitals or clinics? Some of the most valuable work being done in the country, such as the attendance of mothers at prenatal clinics, would be gravely injured in consequence. But he thought it was very likely that public opinion would be too strong to allow this miscellaneous dragging into the net of all sorts of men and women in this way and in the end these provisions would probably be confined to prostitutes. If that were so, it would re-open the chapter of failure which many of them thought was closed for good.

The Percentage of Defaulters.

The Edinburgh Corporation, in a statement they had issued, had shown that in the five years from 1922 to 1926 the defaulters fell from 44 per cent. to 29 per cent. of those who were under treatment. This figure included those who were dead and those, such as seamen, who could not possibly go on with the treatment; so that the actual number of defaulters was very much smaller than the figures shown. In New South Wales, where compulsory treatment had been in existence for some time, they had succeeded in bringing back only 25 per cent. of those who defaulted. Were they going to try this dangerous experiment for the sake of a percentage such as that? They were recommended to pass this Bill on the ground that it would remain in force for under five years, and that then the question could be reconsidered. Was it suggested that there would be any reliable statistics to help the House to come to a conclusion then? They had definite medical opinion in Australia, where the compulsory system had been in force in certain States. He found that a medical conference on venereal disease held in Melbourne in 1922 passed the following resolution:—

> "That in the opinion of this conference there is no evidence to show that the passing of this legislation [i.e. the compulsory V.D. measures] has resulted in any reduction of congenital venereal infections. Judging from the infantile mortality rates under one month, there has hitherto been no such reduction."

He was strengthened in his opposition to the Bill by the knowledge that the Association for Moral and Social Hygiene was diametrically opposed to the measure and believed it to be a thoroughly retrograde step. It was also opposed by all the women's societies in the country, with a few small exceptions.

The Views of Two Great Teachers.

Dr. Little said he proposed to base his arguments for the rejection of the Bill entirely on medical reasons. He might claim some special right to speak in that sense, because for 26 years he had been at the head of two hospital departments in London where the treatment of these diseases was part of the work of the clinic which he conducted. He had seen very great changes in that long period. He went back to two great names in the history of syphilis, Hutchinson and Fournier, under both of whom he sat as a pupil. Hutchinson taught that two years was quite a sufficient treatment to guarantee a cure. Fournier, at the same time, taught that eight years was not more than an adequate period for the continuation of treatment. Those were rather irreconcilable views. Fournier had been proved to be far more right than Hutchinson and more prolonged treatment was the rule for both these disease than when he (Dr. Little) began to practise. The treatment of syphilis especially had been very materially altered by the introduction of two great inventions—a test for syphilis and a certain kind of treatment. Too much force had been attached to both these inventions, but there was common ground, even among medical men who differed so greatly, that early treatment was of essential importance in both diseases for two reasons: infectivity was earlier checked and the prospect of ultimate cure was very greatly increased in proportion to the earliness of the treatment. It was therefore far more important to get a new case than to go on treating an old case, and the Edinburgh Corporation seemed to him to have entirely missed the significance of the treatment of syphilis in the importance they attached to the question of defaulters. The number of defaulters was really a matter of a personal equation. The tests applied varied in different clinics and it was almost impossible to compare figures. The Trevethin Committee, which reported in 1923, made a tentative suggestion that special measures might be necessary to deal with defaulters, but they also said that the question of defaulters was not so serious a menace to public health as the statistics would imply. Not only was the number of defaulters decreasing, but the whole incidence of both diseases was rapidly diminishing in this country. He had that upon the authority of clinics in the City of London. The voluntary method was only instituted in 1916, and the period since then was hardly sufficient to declare that the system had failed, even

if it had failed, but in his view the system had been eminently successful. Medical opinion was overwhelmingly against compulsory methods. The Royal Commission of 1916 was much the most authoritative expression of opinion on these matters. The experts called by that Commission were the very flower of the profession in this country. Their opinion was overwhelmingly in favour of voluntary, secret, confidential services and upon that recommendation the clinics were established with an express promise to patients that secrecy would be observed. Upon that system the whole of the very great success of the clinics had been based. The British Medical Association, in 1923, issued a special circular to all its members—something like 30,000. The response to that circular was overwhelmingly against compulsory notification of venereal diseases. But that was a much less serious infringement of liberty than compulsory treatment, so that the greater carried the less. The Trevethin Committee consisted largely of eminent doctors. They were not men who knew syphilis or gonorrhœa from personal medical experience, and therefore were not a very happy committee, but as far as their authority went they supported the view that compulsory measures were not likely to achieve the purpose which was to secure early treatment.

Opposition to Compulsion.

The Edinburgh Corporation opposed this expression of medical opinion by a statement that the Edinburgh Division of the British Medical Association at a meeting held in Edinburgh, voted in favour of this Bill. He had taken the trouble to find out how many persons attended the meeting. He was told that the number who attended was something like 60. There were 1500 persons practising medicine in Edinburgh, and therefore 60 persons could not be said to voice the opinion of the medical profession in that city. The Bill would be absolutely unworkable without attention being given to the prospects of coöperation by the medical profession. The vast majority of the profession were opposed, and must be opposed, to compulsion because one of their most important traditions was the sacredness of the professional secret and if that tradition was threatened the medical man at once refused to have anything to do with the proposal. It was suggested by the Medical Officer of Health of Edinburgh, who was the protagonist of the Bill in that city, that they were not relying upon the doctors, and that they were going to obtain their information from a crowd of "competent officials attached to public health departments." They would be asked, he presumed, to go foraging about inquiring into the venereal history of the neighbourhood. He (Dr. Little) would not like to be one of those officials visiting a quarter like the East End of London where he had been a medical officer for some years. This was not a medical agitation, but a bureaucratic agitation. He would give the House some medical reason why the Bill would be unworkable. Compulsory treatment of diseases was an entirely new principle with them. As to the argument that specific fevers were subject to compulsory notification, he would point out that those fevers ran a very definite, well-established, perfectly circumscribed course which inevitably ceased at a given time which was well recognised. But the same did not apply to syphilis and gonorrhœa and no comparison was possible.

Standard of Non-infectivity.

The infectivity of syphilis and gonorrhœa was subject to no standard. The Trevethin Report emphasised that, and he would quote a passage which was in itself a sufficient argument against the Bill. The Report said :—

"There is another grave difficulty in the way of any form of notification reinforced by measures to compel treatment that in the present state of knowledge there is no standard of non-infectivity or cure generally accepted by the medical profession, and until this has been attained it is difficult to see how any system involving notification and compulsory measures of treatment could be applied."

That was absolutely true of the scientific position of this question at the present moment. There was no agreement on this question in the medical profession. Reliance to be placed both upon the new test and the new treatment had been greatly over-estimated by lay opinion. They started with the idea that they had a perfectly easy scientific test and that they had a method of treatment which would eliminate syphilis. Ehrlich himself announced that his drug was going to sterilise the patient by one dose. Both these theories had gone by the board absolutely. It was a very difficult test to apply. It was a physiological test, not a chemical test, and certain laboratories had become famous for their skill, or otherwise, in performing the test. It was proposed by the Bill that detention and treatment should be compulsory until the patient could obtain a certificate of cure from "any medical officer." Detention had been ostensibly abandoned by the Corporation by the relinquishment of Clause 3, but he was told by one of the protagonists for the Corporation that they did not attach very much importance to the relinquishment of that clause, because they thought that they could get all they wante by the application of Section 7 of the Public Health Ac by which any infectious disease could be detained un infectivity was over. So that detention was still conter plated by the terms of the Bill, and detention for perio which varied enormously and rested on the certificate of medical practitioner. He was not behind any man in t House in respect and love for his profession, but he recognis its limitations, and he thought it was impossible at prese to expect that the general profession throughout the count would be in a position to give certificates of that kind th would be of any value at all. The tests and the treatme for this disease required very wide and specialised experien and team-work by many experts. A case presenting itse at a hospital was not treated by one man ; it was referr to half a dozen people who went into the case very careful before making any report. Was that possible anywhe in general practice ? They were also asked to rely up the treatment given by any medical practitioner. Aga he said that the modern highly specialised treatment w very dangerous except in highly skilled hands. He h had three deaths from "606" in his personal practic They were going to compel persons by law to submit treatment which carried such risks. It was an impossib proposition in the present state of medical science. Certi cates given under these conditions would be largely valuele The patient would be assured that he was cured when was not cured. The practitioner would have a very stro motive for giving a certificate ; common humanity wou urge him to give a certificate when he could, in order enable the patient to avoid the horrible consequences this Bill in regard to detention and treatment. A default had no illusions at all ; he knew he was not cured, but t patient who was told he was cured was a source of gre danger not only to himself, but to the public. The seco alternative was that the patient should be kept unc treatment for much longer than was necessary. Th again, was a very severe handicap to the citizen wh unfortunately, was caught in this hideous machine. It w suggested that the experiment could be restricted Edinburgh and limited to five years. The experiment cou not be restricted to Edinburgh, because it could not effectively compulsory if it was so restricted. Nothi would be easier for a patient than to get out of the co pulsory area and go to another part of the country wh the more sensible voluntary system was still in force. could not be restricted in point of time, because the eff of introducing the compulsory system would be at on to annihilate the whole voluntary system. After five ye of compulsion what patient would think that he could to Edinburgh and again have confidential treatmen There was no reason for panic legislation. Let them go with the present highly successful system and endeavc to improve the methods of its administration.

A Bill to Stamp Out Disease.

Sir PATRICK FORD said that Dr. Little admitted that th was a considerable conflict of medical opinion. He (Sir Ford) would suggest that, in Edinburgh, which had one the finest medical schools, and where they had the lat methods and the latest information, they ought not to guided by the more antiquated ways of looking at th things. Where there was a conflict of technical opini as in this case, the floor of the House of Commons was n a place suitable for clearing up such matters. The obj of this Bill had nothing to do with moral or social proble It was to stamp out disease, and some form of compuls was sought to deal with what he might call the dead-e of cases which for some years had remained steadily between 900 and 1000. It was admitted that the Edinbu clinic had been run with the greatest skill and success, they could not get away from those 900 to 1000 centres f infection every year which were dangers to the neighbourhc and to the country. There was no suggestion by the p motors that voluntary work should cease, but they contenc that in a certain type of case, which might perhaps recklessly vicious and was entirely recalcitrant, more pov was needed. He did not think the Bill interfered w personal liberty any more than any of the regulations un the Public Health Act. All the promotors said was that wh it had been established that there were these danger cases of venereal disease they should be entitled to segreg them, and if the common sense of the patients did not te them to submit to treatment, they should remain segrega so that they could not infect other people. The medi officer was not entitled to act on any information exc from a doctor unless he took reasonable steps to make su He did not believe that this was going to open the doo blackmail. He did not believe that any responsible medi officer was going to do these things in a lighthearted manr If the information which was laid proved to be false, only was there a small fine provided for in the Bill, but n action for damages for a very considerable sum would The whole weight of the opinion of local authorities n

cotland was behind this Bill. The Convention of Burghs 1922 passed a resolution in favour of the compulsory tification of venereal disease, and at their most recent nference, held on Jan. 27th, 1928, in Edinburgh, they ssed the following resolution :—

"In the opinion of this conference the present law and achinery are inadequate to secure the proper control and eatment of venereal disease, and that it is essential that further wers should be conferred on local authorities in the direction compulsory measures to secure submission to treatment by all rsons infected by a venereal disease and continuance under eatment until discharged."

he Scottish Board of Health in 1922 said :—

"The Board are still of the opinion that the first step should be ot notification of cases of venereal disease but compulsion on rsons knowing or having reason to suspect that they are ffering from these diseases to submit themselves for treatment, id having so submitted themselves, to continue under treatment ntil discharged by the medical officer in charge of the treatment. he Board have under consideration a draft Bill dealing with is question, that might be promoted when opportunity offers, id in regard to which they propose to invite the observations of ie Convention of Royal Boroughs before any overt steps are ken."

he Scottish Board of Health did not produce the Bill id the Edinburgh Corporation and its medical officers ho had led the way in this matter felt that they could not ait any longer. He submitted that it was the duty of ie House to give a second reading to this Bill in order that might be sent to a Select Committee, where evidence uld be taken and the matter could be thrashed out in a dicial manner.

Salvarsan Treatment.

Dr. SALTER, in supporting the rejection of the Bill, said at any law was bad if it offered practically unlimited portunities for evasion and if it was unequal in its incidence the community. The treatment of syphilis was by an jection of highly toxic substances of the arsenobenzol oup, popularly known as "606"—salvarsan or one of e later derivatives. Speaking as a medical man, he lieved that that method of treatment was effective. If had the misfortune to become infected with one of these seases in the ordinary course of his professional work he ould be most eager to avail himself of that treatment, it he would do so with his eyes open, knowing that he was cepting a very grave risk, because death resulted from is treatment in a considerable number of cases every year this country. Every few weeks the medical press reported ses of grave accident following the treatment and a very rrible disease known as acute yellow atrophy of the liver llowed not infrequently. Other great damage to health well as sudden death following an injection were also ported from time to time, and he submitted that it was entirely new principle in British law that the public re to be compelled to take risks of that description. It s not a principle with which the medical profession, as a ole, had ever associated itself. Though he accepted the dern method as being efficient, there were many doctors high standing who did not regard it as any advance on e older method. It was true that a patient could apply another medical man to give him treatment, but in the e of the poorer people the patient had practically no tion. There was another very serious position which uld arise if this Bill became law. At present, if a patient luntarily attended a centre and happened to suffer injury was killed as a result of the treatment no liability rested on the doctor or upon the institution, clinic, hospital, authority supplying the treatment. The position, wever, would be quite different under this Bill. He sub-ted that the method proposed in the Bill was entirely necessary. The Corporation of Edinburgh had published ures in which they stated that the percentage of defaulters l been reduced from 44 to 29, but the Medical Committee the House of Commons had had the advantage of meeting umber of officials of the Corporation, and they supplied m with another series of figures. They were told that 1922 the percentage of defaulters of all cases who pre-ted themselves for treatment was 18; in 1923 15; 1924 12; in 1925 13, and in 1926 12. He was subsequently rmed that in 1927 the figure was 11. That would seem show that the present voluntary system was distinctly ective in spite of the fact that the Corporation had only official who acted as a follower-up of the defaulting es. He submitted that before introducing such drastic posals as those in this Bill, further methods on voluntary s with more effective medical persuasion and an increased nber of followers-up should be undertaken. If that were e there was every prospect that the number of recalci-nts with the exception of an extremely small minority uld be abolished altogether. The experiment of com-sion had been made in a great many countries, but herto not in Great Britain and Holland. It was inter-ng to note that the number of defaulters was smaller Great Britain and Holland than anywhere else. He was rmed that the chief director of the Polyclinic at Amsterdam had stated that with the following-up system 95 per cent. of syphilitic men and 85 per cent. of women had remained continuously under treatment during the two years the system had been in operation, and that these figures could not be surpassed by those published in any country where compulsory treatment had been in force. If Holland could achieve such success without compulsion, there seemed every reason to hope and believe that in this country, with improved methods, equal success would be attained. Many of the persons who had attended for treatment and then defaulted were in some cases infectious, but in many cases they were not infectious. When there was no proof that people were infectious or dangerous to others it was an extremely serious thing to say that they should be punished if they refused to continue treatment. The Bill did not contemplate any steps to prevent people who were infectious continuing to infect other people, but on the other hand, it proposed to deal with people who might not be infectious at all, but had simply not followed up their treatment for as long as the medical officer thought they should have done.

SIR BASIL PETO : Would the hon. Member support a Bill for segregating people who are suffering from venereal disease until they are certified cured ?

Dr. SALTER said he would not support such a Bill, because he believed that it would be ineffectual and would make the position worse. He believed that this Bill would increase the amount of venereal disease ; at any rate, there was a risk that it might do so, and there was no evidence that it was likely to diminish it. He hoped, therefore, that the House would reject the measure.

V.D. and the Infectious Diseases Acts.

Dr. DRUMMOND SHIELS said that he was rather surprised that a better case against the Bill had not so far been made out. The Bill was designed to fill a gap in the operation of the Infectious Diseases Acts under which they had had compulsory powers since 1889. The reasons why venereal disease had not been brought under these Acts were various. Up to comparatively recent times the seriousness of these diseases were not understood and their responsibility for disastrous after-effects was not realised. The specific causes were not known and there was no certainty of a cure. There was, however, high medical and legal authority for believing that they could come under the operation of those Acts, and certain parts of this Bill were identical with the provisions of those Acts. It was rather curious to find so many hon. Members demanding preferential treatment for those suffering from venereal diseases, while perfectly willing to continue to deny to the victims of other contagious diseases the liberty and freedom of which they were at present deprived, often at very great inconvenience to themselves. It was quite impossible for the Royal Commission to recommend compulsory methods in 1916, but they visualised a time when compulsory methods might be necessary. The Trevethin Committee also very definitely outlined something like the experiment which was proposed in this Bill. Nowadays compulsory methods in connexion with ordinary infectious diseases were carried out without any difficulty. There was only one serious and sensible argument against the Bill and that was that it would hamper voluntary treatment and drive the disease underground. The people who were most dogmatic on this question were either only theorists or people who had no personal association with the treatment of these diseases. They found that the venereal diseases officers, medical officers of health, and members of public health committees took another view.

Dr. SALTER : Certainly not.

Dr. SHIELS said he meant in Scotland.

Mr. BUCHANAN : Certainly not.

Dr. SHIELS said he was entitled to state his own opinion, and he had good evidence for what he had said. He believed that the voluntary system could go on perfectly well and be supplemented by the compulsory parts of this Bill. As to the terrible risk to the patient in connexion with treatment there had been only one death following injection in Edinburgh since 1917.

Dr. SALTER said that it had been stated in the medical press recently that over 30 deaths under these circumstances had occurred.

Dr. SHIELS said that he was speaking of experience in Scotland. The treatment had now become so safe that a public authority was perfectly justified in using the methods proposed in this Bill. After all, medical men knew that if there was potential danger in the treatment there was an absolute certainty of grave danger awaiting these people if they were not treated. Were they to go on indefinitely with a system which was very like pouring water into a sieve ? Last year Edinburgh spent over £20,000 on the treatment of this disease. The estimates of the Board of Health for the treatment of this disease in Scotland showed that £62,000 would be required next year. That was only two-thirds of the amount, because the local authorities had to make a contribution, which raised the total to over

£87,000, or £4,000 more than last year. This did not suggest that the purely voluntary system had been successful in Scotland. In the whole of Britain they were spending over £300,000 in dealing with this disease.

Preventive Medicine.

The ideal of the medical profession was preventive medicine and they were looking forward to a time when they would not be curing disease, but would be keeping people well. It was very depressing to a clinic doctor to find that much of his treatment was of little effect because of the carelessness and indifference of a certain section of the population. General hospitals, Poor Law hospitals, asylums, and prisons were very largely filled with the end products of this disease. They had, in many cases, a development of valvular disease of the heart, seriously incapacitating and painful to witness; they had arterial and nervous diseases often paralysing in their effects. Insanity and blindness might also follow the neglect of these conditions. The expert of the Ministry of Health on this subject at the recent Imperial Conference at Wembley estimated that the treatment of venereal disease at the present time saved £50,000 in asylum expenses, and if treatment could do that on only one aspect of the end-results of this disease, what would entire prevention achieve, even in economy? He believed that compulsion and early treatment of these residual cases would result in the prevention of many of these later developments, and that would release a large number of much-needed beds in the ordinary hospitals. His opinion was that if the Bill had any effect upon the voluntary attendance at centres it would be a good effect. At the present time one of the disadvantages in the treatment of venereal disease was that the public did not sufficiently realise the seriousness of it and there was no doubt that compulsory powers would awaken the public mind on the subject. With regard to treatment by quacks it was quite well known that since 1917 it had been illegal and a serious offence for any unqualified person to treat venereal disease. Therefore, this fear of interference with the voluntary system had no basis in fact or experience to support it, and there was at the worst so slight a danger as not to stand in the way of this important experiment being carried out, especially at the hands of those who had carried out the voluntary system so conscientiously and so successfully. He was surprised to find some women's societies against the Bill when this disease meant so very much to women. He would give a few cases to the House which justified the proposals of the Bill.

Here was a case of a male patient, single, treated for three weeks for syphilis and defaulted. Married one year later, infected his wife, who had two miscarriages and subsequently two children who survived, but were found to be infected with syphilis. In addition, other members of the same household, aged 12 and 14, were innocently infected with syphilis on the lips. Four years later this man had an abscess of the brain and paralysis due to syphilis. Power to compel this individual, in the first instance, to complete his treatment would have prevented the infection of his wife, the miscarriages, the inherited syphilis in his two surviving children, the acquired syphilis in two children in the same household, and his own death.

Here was another case: Female, aged 36, seen at hospital and delivered of a still-born child due to syphilis. Advised to attend for treatment and repeatedly implored to do so and bring her family. Two years later reported with child, aged 5, suffering from loss of sight due to syphilis. Mother at that time seven and a half months pregnant; child subsequently born suffered from syphilis. Mother now stated that she wished she had been compelled in the first instance to attend for treatment. The eldest child's sight would undoubtedly have been saved and both saved from suffering from syphilis.

Another case was that of a child, 6 days old, brought to hospital suffering from ophthalmia neonatorum, which led to blindness. Father and mother found to be infected. Both refused to continue treatment, although both told they had syphilis and gonorrhœa. Child died. Eighteen months later the same mother reported to hospital with another child, suffering from syphilis, which also died. Father and mother had consistently refused to be treated and were both of child-producing age. The second child could certainly have been saved if father and mother had been treated.

It seemed to him, also, that these women's societies might very seriously consider the case of the children. In the Edinburgh centre there were between 200 and 300 children attending. All types of people attended the clinics and people of all social grades. There had never been any class distinctions and there would not be in the future. Compulsory methods in Europe had only been against prostitutes and had no reference to the system suggested in this Bill. In Germany, however, which had always been a progressive country in public health, a few weeks ago a system was introduced on very similar lines to this Bill. In some towns in the Dominions, such as Toronto, there was a similar system at work. In Toronto less than 2 per cent. of prosecutions were required to make the system effective.

Effect of Compulsion in Australia.

He had looked into this question in all the States of Australia and had a special interview with the Director of Medical Services in Melbourne. They were perfectl satisfied with the system there and considered the com pulsory powers of great value. The Commissioner Health for Western Australia said:—

"V.D. clinics are well attended, and literally hundreds patients have been returned for treatment chiefly by persuasio who without the Act with its compulsory powers would hav remained partially treated and so sources of infection . . . Suc prosecutions as there have been have been almost entirel against men. Very few women have been brought up, and suc as have been have had plenty of warning and have been knowin and deliberate offenders . . . .

"I think it will be conceded by all fair-minded people that th Act is certainly doing good, and it is a well-known fact tha although there is a Vigilance Committee in this State, which ha asked anyone who considers himself or herself wronged by th administration of the Act to report themselves and their case will be inquired into, no such case has been brought forwar since the Act came into operation in 1916."

As regarded the criticism that these powers ought not t be sought in a local Act, he would point out that the Boar of Health in Scotland had more than once in its Repor spoken of the necessity for compulsory measures. Th English Ministry of Health, however, had always seeme to have a curious prejudice against any legislation on thi subject. It seemed strange that a united Scotland, wit all its local authorities behind this Bill, should be prevente by an English Ministry of Health from making an importan experiment in public health in connexion with this importan disease. He believed that those who opposed the Bill wer undertaking a very grave responsibility.

Progress Under the Voluntary System.

Sir JOHN GILMOUR, Secretary of State for Scotland, sai he regretted that he would have to advise the House, quit plainly and quite emphatically, to reject this Bill. He di so after very careful consideration of the question with h advisers. They would all agree that this disease was scourge which affected the health of the community and tha it was essential to make as great progress towards it elimination as possible, but in this problem, as in man others, the measure of progress must always be in proportio to, and not in advance of, the volume of public opinio which supported it. He and the Scottish Board of Healt recognised the skill with which the Edinburgh Corporatio and other authorities throughout Scotland had endeavoure to deal with this problem. But while they quite recognise the intense anxiety of those responsible to make rapi progress, that did not remove the difficult question as t whether, if they had compulsion, they would be able t deal with these cases any more readily than at the preser time. Under the voluntary system they had admittedl made great progress. He did not feel convinced, nor di his advisers, that the possibilities of education and voluntar teaching and, if they liked, the pressure of public opinio had been fully exhausted. In those circumstances the Hous should think very carefully indeed before making an exper ment which was admittedly one with very far-reachin consequences and one which was bound to have its effe on areas far beyond the city in which it was being mad It was an experiment which, if it failed or partially faile was bound to have reactions which many of them cou not foresee. He therefore asked the House to reject th measure.

Common Grounds.

Lieut.-Colonel FREMANTLE said the House had be afforded that evening one of those delightful opportuniti of seeing the medical profession divided. They we divided all the more because of their honesty and genuinene of determination to tackle evil questions. But there we certain definite grounds which they had in common. the first place they had a common realisation of the inten seriousness of the position which they were trying to mee The Royal Commission in 1916 came to the conclusion th no fewer than one person in ten of the whole populatio of the large cities was infected with syphilis, which was o of the great killing diseases. Gonorrhœa was equal prevalent, or more so, and that was one of the great crippli diseases. It was true that the number of defaulters ha been reduced and he hoped that it would continue to declin But leaving aside statistics, he asked any impartial man woman of the world whether they imagined that any syste of voluntary treatment was going to clean the slate, or secu the treatment, of those who were recalcitrant? Of cour it was not. The Government, from the pronounceme which they had just heard and those who were opposed the Bill, were quite content that nothing should be do for these people.

Several hon. Members: Certainly not.

Colonel FREMANTLE said that these people would refu voluntary treatment. They were careless and could n be got at by voluntary measures. The medical professi and all who had to deal with public health were unanimo that the main basis of the treatment of the disease an still more, the measures of prevention must be on a volunta

ystem. There was no question of trying to get over that. They intended to keep the voluntary system under this Bill, but the question was, could they clear up the dregs and the recalcitrants at the bottom? It was because he believed that the Edinburgh Corporation had met with very great success in this treatment that he supported this Bill as an experiment. He happened to be the only member of the Trevethin Committee in the House. Anybody who had been through this problem as that Committee went through it would realise how intensely serious was the proportion of recalcitrants and defaulters. Nobody could say that a Corporation such as that of Edinburgh, who were fully conversant with the difficulties and dangers and were a responsible elected body, were not the ideal body to make one of those experiments on which alone they could build up a system of general administration.

After further debate the motion for the rejection of the Bill was carried by 156 votes to 93.

Bethlem Hospital Bill.

The Bethlem Hospital Bill was read a second time in the House of Lords on Thursday, April 19th.

The Budget Statement.

Mr. CHURCHILL (the Chancellor of the Exchequer) made his Budget statement in the House of Commons on Tuesday, April 24th. He announced that it was proposed to introduce a new form of National accounts on the basis of which the expenditure for 1928 was estimated at £727,381,000. The revenue, including £13,200,000 from the Currency Note Reserve, was estimated at £761,083,000, leaving a gross total prospective surplus of £33,702,000. There would be in addition to the Sinking Fund, including £13,200,000 from the Currency Note Account in order to bring the fund again to £65,000,000. This would absorb £14,000,000. A reduction of ½*d.* per lb. on the sugar duty would cost £2,300,000. Further relief would be given to income-tax payers in respect of children's allowances. The allowance for the first child would be increased from £36 to £60, and for other children from £27 to £50. The relief would also be made applicable in the year of the infant's birth. This would affect 650,000 households. The man with £400 a year with three children would be freed altogether from tax; the man with £500 a year in the same position would have his income-tax halved and receive a relief equal to 8*s.* 9*d.* reduction in standard rate; the £600 a year family would receive a relief equal to 1*s.* 6*d.* reduction in the standard rate; the £700 a year family the equivalent of 1*s.* 5*d.* reduction in standard rate; the £800 a year family the equivalent of 1*s.* 2*d.* reduction in standard rate; and the £1000 a year family more than 8*d.* reduction in standard rate. The cost of this concession would be £2,100,000 in the present year, and £4,500,000 in a full year. It was proposed to impose a duty of 4*d.* a gallon as from April 25th on the lighter hydrocarbon oils imported or derived from imported materials. The formula would cover not only petrol and other forms of motor spirit, but also kerosene and white spirit. It excluded the heavy oils known as fuel oil, Diesel oil and gas oil, and also lubricating oils. It would cover one vegetable oil—namely, turpentine. Stocks under 10,000 gallons at present in the hands of garages and private individuals would escape duty. In view of the oil duty some mitigating reductions in licence duties on heavy and hackney vehicles would be made. The Chancellor of the Exchequer outlined a new scheme for relieving rates on productive industry and announced that in connexion with that scheme two new Bills would be introduced. The Valuation (Ascertainment) Bill would be introduced by the Minister of Health as soon as possible to define the scope and direction in which the relief should be given. In November the Minister of Health would introduce the main Local Government Bill dealing with the reimbursement of local authorities and creating larger areas. The opportunity would be taken to establish a system of block grants subject to quinquennial revision. He hoped that the Local Government Bill would receive the Royal Assent by Christmas, or at any rate by Easter. On this basis, and provided new valuations were completed by about the same date, the first relief to rates on productive industry would begin with the rate payment of October, 1929. The money to pay for the new system of rate relief would be provided out of the new oil taxation provided in the present Budget.

HOUSE OF COMMONS.

Wednesday, April 18th.

Treatment of Venereal Disease at Sea.

Mr. BUCHANAN asked the President of the Board of Trade if he was aware that it was common for cargo ships to go to sea without any medicines or drugs for the treatment of venereal disease; and if he proposed, by either voluntary or compulsory method, to see that each ship was supplied with such remedies.—Mr. HERBERT G. WILLIAMS (Parliamentary Secretary to the Board of Trade) replied: The hon. Member has been misinformed. All cargo ships trading to ports abroad are required to carry medicines, including those necessary for the treatment of venereal disease, and ships are inspected from time to time to see that this requirement is carried out.

Cost of Health Insurance Drugs and Appliances.

Sir ROBERT THOMAS asked the Minister of Health what was the average cost of drugs and appliances per insured person during 1927 in the areas of Welsh insurance committees and in the areas of English insurance committees, respectively.—Sir KINGSLEY WOOD replied: The figures for 1927 were approximately 29·5 pence in Wales and 35·1 pence in England.

Thursday, April 19th.

Health of Asbestos Workers.

Mr. BRIANT asked the Home Secretary if his attention had been called to the dangers to asbestos workers from asbestos dust; if he would have a periodical examination of the workers; and if inquiry was being made as to the dangers attending this industry.—Sir WILLIAM JOYNSON-HICKS replied: Two cases of suspected danger to health have been recently reported to the Factory Department and the matter is being carefully investigated by the medical inspectors. Should their inquiries show that any special precautions are required, the necessary steps for the purpose will be taken.

Animals and Poison-gas Experiments.

Sir ROBERT GOWER asked the Home Secretary the number of dogs and other living animals, respectively, which were during the years 1926 and 1927 subjected to poison-gas experiments at the War Department experimental station, Porton, Wiltshire, or elsewhere in the United Kingdom under 39 and 40 Vict., cap. 77; and under what certificates and by what licences were such experiments performed.—Mr. DUFF-COOPER, Financial Secretary to the War Office, replied: No dogs were used for these experiments at Porton or elsewhere. Information regarding experiments on other animals at Porton is given in the following table:—

—	1926.	1927.	Total.
Rabbits	385	86	471
Goats	3	2	5
Guinea-pigs ..	193	259	452
Cats	20	11	31
Monkeys	—	1	1
Mice	31	26	57
Horses	12	—	12

The above experiments were carried out under licence alone or under Certificates A.1. and F.1.

Experiments at the Physiological Laboratory, Cambridge.—1926, 214 under Certificates A.1 and E.1; 1927, 28 under Certificate A.1.

Maternity and Child Welfare Centres.

Mr. JOHN PALIN asked the Minister of Health the number of maternity and child welfare centres in existence in England and Wales at the present time, and the figures at this time last year.—Mr. CHAMBERLAIN replied: The total number of these centres known to my Department was 2685 at the beginning of the present month, as compared with 2575 at this time last year.

Clinics for Treatment of Rheumatism.

Mr. HARDIE asked the Minister of Health whether it was the intention of the Government immediately to increase the number of clinics for the treatment of rheumatism.—Mr. CHAMBERLAIN replied: I shall watch with interest the results of experiments which are being made in the provision of treatment in clinics for persons suffering from rheumatism, but it is not the intention of the Government itself to set up such clinics.

Official Criticism of Panel Doctor's Prescriptions.

Sir COOPER RAWSON asked the Minister of Health whether his attention had been called to the Report of the East Sussex insurance committee with regard to a case in Hove, where it was alleged that the panel doctor was visited by a regional medical officer of the Ministry, who criticised his methods of prescribing, and that subsequently the doctor was threatened with action on the part of the Ministry unless he prescribed medicines of a cheaper character; and what was the reason for such an interference with the jurisdiction and authority of the panel committee.—Mr. CHAMBERLAIN replied: My attention has been called to this case and I am carefully considering the report to which my hon. friend refers. I must point out, however, that the visit of the regional officer was in fact directed to ascertaining, in accordance with the Medical Benefit Regulations, whether the case was one which should be referred

to the Panel Committee and that the warning issued to the doctor indicated that in certain circumstances such a reference might have to be made.

Lost Cards and Eligibility for Sickness Benefit.

Colonel VAUGHAN-MORGAN asked the Minister of Health whether, in the case of regular contributors under the National Health Insurance Act inadvertently losing their cards on which the stamps had been duly fixed and cancelled, he would take steps to see that these people should be credited with the amount of their paid contribution and entitled to sickness benefit under the scheme instead of having to defray the cost of stamps for a duplicate card or being treated as a person in arrear with contributions and therefore not eligible for sickness benefit.—Mr. CHAMBERLAIN replied: Under the statutory regulations governing the benefits of insured persons in arrears a contributor cannot receive credit for contributions paid until a duly stamped card is surrendered to his approved society. I regret that it has not been found practicable to allow an exception to be made in the case of contributors who claim to have lost their cards, as it is essential for the proper working of the health insurance scheme that nothing should be done which might conduce to laxity on the part of insured persons with regard to the care and surrender of their cards.

Sanitary Conditions in the Hop-fields.

Mr. BRIANT asked the Minister of Health if his attention had been called to a statement by the medical officer of health for Kent that the by-laws affecting the conditions of hop-pickers had not been adopted in their entirety and also attributing negligence in their enforcement by the local authorities; and, whether in view of the danger to the health of the hop-pickers and also the neighbourhoods in which they temporarily reside, he would see that the by-laws were uniformly adopted and enforced.

Dr. VERNON DAVIES asked the Minister of Health if his attention had been drawn to a recent address by the county medical officer of health for Kent referring to the sanitary conditions of some hop-picking camps, and the administration of certain rural district councils in connexion therewith; and what proceedings, if any, he proposed to take to remedy the conditions referred to?—Mr. CHAMBERLAIN replied: Yes, Sir. This address and a report made by the Medical Officer of Health are receiving my consideration. I have no power to compel a local authority either to adopt or to enforce by-laws on this subject, but I have represented to the local authorities the importance of their administrative functions in this matter and, if necessary, I shall continue to do so.

Massage and Electro-therapeutic Treatment.

Captain FRASER asked the Minister of Health, if, in view of the value of massage and electro-therapeutic treatments in hastening the return to physical fitness of persons who suffered from accident or disease, causing loss of time or efficiency in industry, he would consider making these treatments an additional benefit in national health insurance.—Mr. CHAMBERLAIN replied: Under the National Health Insurance Bill now before the House, provision is made for the inclusion in the list of additional benefits of a new benefit under which approved societies will be able to make payments towards the cost of massage and electro-therapeutic treatment of their members in approved institutions.

Captain FRASER: May I ask whether the answer means that massage will be a direct additional benefit or will it be given indirectly through institutions.—Mr. CHAMBERLAIN: It takes the form of a new benefit. Power is given to make contributions towards the cost of massage.

MONDAY, APRIL 23RD.

Sanitary Conditions in the Hop-fields.

Mr. BRIANT asked the Minister of Health if he would consider the introduction of a Bill for the compulsory registration of hop-pickers' camps so that adequate provision for the health and comfort of the workers might be assured before such camps were opened, and (2) if the reports of the inspectors of his department who visited the hop fields during the last season confirmed the statements of the medical officer of health for Kent as to the conditions in the hop-pickers' camps; and if the reports will be available to the public or Members of the House.—Sir KINGSLEY WOOD replied: Though there has been an improvement in recent years, I cannot say that my right hon. friend is satisfied with the conditions existing in the hop fields. The reports of officers of my department are confidential documents and there appears no sufficient reason for their publication in this case. The whole question is receiving my right hon. friend's further consideration, but I may observe that compulsory registration of camps would not necessarily provide any solution of the difficulties.

TUESDAY, APRIL 24TH.

Small-pox in London.

Mr. LANSBURY asked the Minister of Health the to number of cases of small-pox notified in London duri the past 12 months ended March 31st, the number of ca which had been traced to homeless persons, and the numb for which no contacts had been traced; and the to number of small-pox cases notified for the whole count during the same period, the number of those vaccinat and the number of deaths certified as due to small-p for the same period.—Sir KINGSLEY WOOD replied: T answer to the first part of the question is 51. There w seven cases of small-pox during this period amongst homel persons in London, but information is not available as the number of persons who had been in contact with th cases and who subsequently either developed small-pox escaped infection. 13,348 cases were notified in Engla and Wales during the period in question. Complete p ticulars as to the vaccinal condition of these cases are n available. During the same period small-pox was ente on the medical certificate as the cause, or one of the caus of death in 66 instances. The figures quoted above are, course, provisional.

Medical News.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURG ROYAL COLLEGE OF SURGEONS OF EDINBURGH, AND ROY FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW At recent examinations the following candidates w successful:—

THIRD EXAMINATION FOR CONJOINT DIPLOMA.

Robert Leitch Allan, Mohammed Umar Hayat, Frank Rob Bernard Howard Kennedy, Walter Phillips Kenne John M'Connell, Harry Michaelson, John Ernest Morris William Oscar Molander, James Ian Meikle, Helen Hallic Norris, John M'Kichan Reid, William Charles Ross, a Mary Thomson Wilson.

Pathology.—Cyril Bellamy and Joseph Everett La Frenais

Materia Medica.—Andrew Brock, Kenneth Wilkinson Bru John Cochran, Albert Benjamin Foo, Arthur Royle Hunt, Donald Forbes Johnstone, William Evan Macdoug Mahamarakkalage Anslem Perera, Elsie Janet Duff Sc Robert John Giffen Sinclair, and Lawrence M'La Young.

FINAL EXAMINATION FOR CONJOINT DIPLOMA.

Thomas Gilchrist, Henry Thomas Chapman, Agnes Donalds Anthony Francis Joseph Casie Chitty, James Tay Erskine, John Edward Mulholland, Radcliffe Dougan Jor Sri Kishan Kapur, Norbert Anthony Felix de Soy Herbert Arthur Shakerley, Julius Leibman, Willi Wallace, Mohamed Rahman Ramjohn, Surindro N Chopra, John Pullar Logan, John Lees, Lewis Meredy Davies, Eileen M'Cabe, Norman Macleod, William All Andreas Johannes de Villiers, Arthur Barton Pilg Amies, Robert Dalziel Buckner, Ahmad El-Saved Ammar, Cecil Benjamin Goodwin, Tarabai Kelarl Hyman Louis Cohen, Clarence Edward Vaz, and Bish Singh.

Medicine.—Nutting Stuart Fraser, Aaron Jacorovit Norman Webster Laing, Horace Walpole Alexan Marshall, Hubert Melizan Clement de Silva, and Ferdin Ernest Llewellyn Stewart.

Surgery.—Walntantrigi Daniel Alvis, John Campbell, Hut Gunavatana, Harry Lazarus, Mahmud Riffaat, Chadr Krishna Row, Barney Schulman, and Oscher Stern.

Midwifery.—Okunade Ajibade, Aquilino Joseph Fra Almeida, Walntantrigi Daniel Alvis, Alexander Ho Frew Arnott, John Campbell, Alan Mackenzie Fra Hubert Gunavatana, Aaron Jacorovitch, Kandiah Ka gasabapathy, Norman Webster Laing, Harry Laza Mary Elizabeth Josephine Magee, Augustine Byrne O'Br Barney Schulman, Ferdinand Ernest Llewellyn Stew Chadrian Krishna Row, and Hope Lazarus.

Medical Jurisprudence and Public Health.—Ronald Dun Allison, Ivor Campbell, Hugh Craig, Donald Peter D Theodore Herzel Fairley, Frank John Fell, Percival Art Pitt Fennell, Jate Ranjan Sen Gupta, David Alexan Herd, Mahabalage Don Daniel Jayawardana, John Kear Nashed Younan Labib Christopher Leo Xavier Sathien Muttukumaru, Thiam Hock Oh, James Baird Reid, C Hartley Rowe, William Paterson Shand, Raym Ponsonby Carew-Smyth, Ian William Spence, and Em Cadwaladr Thomas.

UNIVERSITY OF ABERDEEN.—Lord Meston has be nominated for election as Chancellor of the University in place of the late Duke of Richmond and Gordon.

GRENFELL MEDICAL MISSION.—Sir Wilfr Grenfell, F.R.C.S., has arranged to visit England fr Sept. 25th to the middle of December. He will give lectu on his medical work in Labrador during the past 35 ye

UNIVERSITY OF GLASGOW.—On April 21st the llowing degrees were conferred :—

M.D.

*Muriel J. Brown, *W. C. Harvey, *W. A. Horne, †W. Brown, †J. W. Graham, †W. Napier, and D. O. Taylor.

CH.M.

D. R. E. Roberts.

M.B., CH.B.

With Honours.—J. S. M. Robertson.
With Commendation.—D. Fraser, D. R. Milligan, R. H. Moyes, Constance D. Roberts.
Ordinary Degree.—J. Aitchison, T. R. Baird, T. Barrowman, C. Black, R. Brown, D. H. W. Cameron, J. M. Carnovcki, W. Craig, Mabel E. Cruickshank, A. F. R. Dewar, W. M. Dickson, Katherine M. Douglas, S. K. Drainer, W. Duncan, S. Dunn, J. G. Dyer, T. Dymock, C. R. Gibson, L. P. Gray, A. Henderson, J. Hinds, Elizabeth C. M. Jack, J. C. Cane, J. G. Kirk, L. Lamont, H. Leslie, P. L. B. Lorcet, Isabella K. A. Macdonald, Janet B. Macdonald, Elizabeth S. McFarlane, Margaret I. McGill, A. I. Maclean, J. C. MacMaster, D. C. M. Macpherson, A. H. W. Marshall, W. Marshall, A. Miller, J. W. Montgomery, T. Y. Muir, J. E. Naftalin, Frieda J. Oswald, A. L. Pirrie, J. A. Reddrop, J. F. Reilly, J. Riddell, R. Ritchie, A. B. Robertson, J. L. D. Roy, M. Sragowitz, W. Stewart, G. M. Stirling, C. Taylor, W. S. Thomson, J. B. Tyrie, D. Wilson, J. N. Wilson.

UNIVERSITY PRIZES.

Macewen Medal in Surgery.—Margaret W. Thomas.
Macleod Gold Medal (Surgery).—James F. Heggie.
*With high commendation for thesis.
†With commendation for thesis.

LIGHT AND HEAT IN MEDICINE AND SURGERY.—e Second International Conference (and Exhibition) on at and heat in medicine, surgery, and public health will held in London from Oct. 29th to Nov. 1st. The conence is organised by the *British Journal of Actinotherapy*, Featherstone-buildings, London, W.C. 1.

CHEMICAL INDUSTRY CONFERENCE.—A conference l be held from May 11th to 15th at the house of the stitution of Chemical Engineers, Great George-street, ndon, S.W. The communications to be made on May 14th lude a paper by Sir Alexander Houston on Water rification, and one by Mr. J. N. Coste on the Pollution tidal and Non-tidal Streams. On May 15th, in the morning, address on Scientific Research as applied to Industry, l be given by Sir Alfred Mond, and Sir John Russell, .S., will speak on the Part Played by British Workers he Application of Fixed Nitrogen to the Soil. A dinner l be held at Les Gobelins Restaurant, 1, Heddon-street, gent-street, London, W., on May 11th, after which Francis H. Carr will speak on Some Chemical Engineering pects of the Fine Chemical Industry. On May 12th a t will be paid to the Rothamsted Experimental Station, penden.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION. meeting of the Council of the Medical Women's Interional Association was held at Bologna on April 11th, was followed on April 12th, 13th, and 14th by an Open ting, which was attended by some 120 women doctors resenting 15 different countries. Spain and Sweden, ch have quite recently formed associations, were resented for the first time by fully accredited delegates, eight countries which were unable to send representas presented papers on one or both of the subjects selected discussion—viz. (1) medical measures for the protection children and young people in the various countries (2) diseases of the eye in relation to general medicine. ll 35 papers were received and were read in English, nch, German, and Italian. The Italian railway authori- gave special facilities and several Governments made nts to assist their delegates. Both the local committee the central Italian authorities had planned entertainnts on a generous scale. The Queen of Italy acted as roness and a "committee of honour" had been formed Signor Mussolini as President, and Signor Turati, retary-General of the Fascio, as Vice-President. The gural ceremony took place in the library of the old versity buildings, at which the Prefect, representing the lian Government, the Podestà of Bologna, and Prof. a, President of the Medical Faculty, spoke, and Lady rett, President of the Medical Women's International ociation, replied. An afternoon reception was given at Town Hall, and a dinner at the Fascist headquarters, n Miss Martindale, hon. secretary of the International ociation, replied to the complimentary speeches made. Saturday and Sunday expeditions were organised to enna and Rimini. Visits were also paid during the k to the principal hospitals of Bologna, in particular Istituto Ortopedico Rizzoli and the New Children's pital, the Ospedale Gozzadini. The meetings of the Asson were held in an historic setting, for the University had the historic Theatre of Anatomy in the Archiginnasio, h dates from the sixteenth century, for the purpose.

Mr. Neville Chamberlain (Minister of Health) has appointed Mr. A. Nevil Rucker to be his private secretary. Mr. D. C. L. Ward is to be private secretary to Sir Kingsley Wood.

INTERNATIONAL CONGRESS ON LIGHT.—The First International Congress on Light will meet from Sept. 4th to 6th at Lausanne, and on Sept. 7th at Leysin, where it will celebrate the twenty-fifth anniversary of Dr. Rollier's work. Prof. Rosselet, of Lausanne, will be the president. Communications and inquiries may be addressed to Dr. G. Murray Levick at 73, Harley-street, London, W. 1.

INTERNATIONAL INDUSTRIAL MEDICAL CONGRESS.—As we have already announced this congress will be held at Budapest from Sept. 2nd to 8th. A preliminary programme has now been issued and may be had from the hon. foreign secretary of the Council of Industrial Medicine, 12, Stratford-place, London, W. 1.

CHURCH MISSIONARY SOCIETY.—The annual meeting of the Medical Mission Auxiliary of this society will be held at the Central Hall, Westminster, at 7.15 P.M., on Wednesday, May 2nd. Sir Francis Champneys will take the chair, and the speakers will include Dr. C. M. Schaffter and Dr. J. H. Lechler. Tickets may be had from the superintendent, Loan Department, Church Missionary Society, Salisbury-square, London, E.C. 4.

OXFORD MUSEUM OF SCIENCE.—A scheme is on foot to found a museum illustrating the history of science and medicine in relation to academic studies at Oxford. The University has allotted part of the Old Ashmolean Building to the Lewis Evans Collection, and sympathisers with the scheme are invited to attend a meeting at the house of the Royal Society of Medicine, 1, Wimpole-street, on Wednesday, May 2nd, at 3.30 P.M.

MATERNAL DEATH-RATE.—The Queen's appeal for concerted action to reduce maternal mortality has resulted in the nine London Voluntary Maternity Hospitals forming a standing committee to deal with the subject. The committee will be a clearing-house for information, and it is hoped to associate the provincial maternity hospitals with the work. The hon. secretary of this committee may be addressed at 5, Cosway-street, London, N.W. 1.

A CHURCH HOSPITAL IN NEW ZEALAND.—A Church of England general hospital was recently opened at Christchurch, New Zealand, by the Governor-General of the Dominion. It is called the St. George's Church of England Hospital, has cost £40,000, has 67 beds, and is staffed by the Order of St. Elizabeth.

WEST MIDDLESEX POOR-LAW HOSPITAL.—The Brentford Board of Guardians is about to extend its hospital at a cost estimated at between £85,000 and £95,000. The plans provide for a new X ray department, a new maternity block, further ward accommodation, and other incidental works.

SHROPSHIRE ORTHOPÆDIC HOSPITAL.—This pioneer institution, founded in 1900 by Dame Agnes Hunt, last year had a daily average of 312 in-patients, and treated a total of 1020 patients. The income was £48,000, which slightly exceeded the expenditure, and an investment fund of nearly £5000 has been accumulated.

PRESENTATION TO A MEDICAL OFFICER OF HEALTH. Dr. Ashleigh Glegg, medical officer of health for Lindsey, Lincolnshire, who is about to take up a similar position under the East Sussex County Council, has been presented by his colleagues and by the staff of the department over which he has presided for 20 years, with a grandfather clock and a Sheraton book-case.

DONATIONS AND BEQUESTS.—Mr. Edward William Mellor, of Lytham, chairman of the hospital committee, has given £15,000 to the committee of Lytham Hospital for the completion of the rebuilding scheme, which has been retarded through lack of funds.—Mr. Albert Bland, of Penrith, left £500 to the Penrith Jubilee Hospital, £200 each to the Cumberland Infirmary, Edinburgh Royal Infirmary, and Dr. Barnardo's Homes, and £100 each to Siloth Convalescent Home, the Lord Mayor of London's Cripples Fund, and St. Dunstan's Hostel for the Blind, and the ultimate residue between the Cumberland Infirmary, the Siloth Convalescent Home, and the Penrith Jubilee Cottage Hospital.—Miss Thomas, of Llantysilio Hall, has given £1000 to the Llangollen Cottage Hospital to endow a bed in memory of her brother, the late Mr. John Thomas.—Lord Barnby, of Blyth Hall, near Doncaster, has given £10,000 to the fund in aid of Bradford's new infirmary.—Mr. Thomas Gallaher, J.P., left, among other bequests, £2000 to the Royal Victoria Hospital, Belfast; and £1000 to the Belfast Hospital for Sick Children.

COMMITTEE OF INQUIRY ON LEAD-ETHYL PETROL.—At the preliminary meeting of the committee which was held to-day the existing information regarding lead-ethyl petrol was considered and the question of procedure discussed. The next meeting of the committee will be held in Room 61, second floor, H.M. Office of Works, St. James's Park, S.W.1, at 11 A.M., on April 30th. Evidence will then be taken from the Air Ministry and the Anglo-American Oil Company. The proceedings at that meeting will be open to the public. The duty of the committee is to ascertain whether the use of ethyl petrol is in any way dangerous to health, and any persons wishing to give evidence on this question should communicate with the Secretary of the Committee, Ministry of Health, Whitehall, London, S.W.1.

CHARACTERISTICS OF CREAM.—A case was heard at Birkenhead on April 13th in which a dairyman was summoned for selling cream which was not of the nature demanded. The deputy town clerk, who prosecuted, referred to the new regulations prohibiting addition of preservatives to cream, and said that to meet this situation a new article known as "reconstituted cream" had been placed on the market. The public analyst said that a sample of this cream had not turned sour in a week, whereas natural cream would not have kept for 24 hours. What had been sold was in his opinion an emulsion of butter. The milk dealer who had supplied the defendant described the processes through which fresh milk passed in the separation of cream, and declared that the sample was not an artificial product; neither preservatives nor butter had been used in its composition. The magistrates dismissed the summons, finding the charge not proven. An application for costs was refused.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, May 1st.—5.30 P.M., ORTHOPÆDICS. (Cases at 4.30 P.M.) Annual General Meeting: Election of Officers and Council for 1928–29. Cases: Mr. Rowley Bristow: Case of Bilateral Dislocation of the Patella. Mr. Whitchurch Howell: Case of Dislocation of the Shoulder. Other cases will be shown.
WEDNESDAY.—5 P.M., HISTORY OF MEDICINE. Annual General Meeting: Election of Officers and Council. Papers will be read dealing with the sources of Harvey, as follows: Prof. F. J. Cole: The History of Embryology. Dr. J. F. Prendergast: Galen.
THURSDAY.—8.15 P.M., TROPICAL DISEASES. Annual General Meeting: Election of Officers and Council. Demonstration: Sir Leonard Rogers: Climate and the Incidence of Small-pox, Cholera, and Plague; Forecasting Epidemics.
FRIDAY.—5 P.M., LARYNGOLOGY. (Cases at 4 P.M.) Annual General Meeting: Election of Officers and Council. Communication by Dr. R. Graham Brown (Brisbane). Discussion of cases shown at March meeting. Cases will be shown by Mr. Leslie Powell, Mr. Mollison, Dr. Dan McKenzie. 8.30 P.M., ANÆSTHETICS. Annual General Meeting: Election of Officers and Council. Discussion on Late Ether Convulsions. Opener: Dr. C. F. Hadfield.
SATURDAY.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Annual General Meeting: Election of Officers and Council. Papers: Mr. John P. Stuart: The Histopathology of Mastoiditis. Dr. R. Graham Brown (Brisbane): Case of Spherical Bulging of the Floor of the Third Ventricle, Secondary to Internal Hydrocephalus, and Simulating a Pituitary Tumour. Cases and Specimens will be shown by Mr. L. Graham Brown, Mr. E. D. D. Davis, Mr. H. Kisch, and others.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, May 2nd.—3.30 P.M., Dr. J. Strickland Goodall: Beginnings of Heart Disease in Children.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Upper Montague-street, Russell-square, W.C.
THURSDAY, May 3rd.—5 P.M., Naval, Military, and Air Force Hygiene Group of the Society. Discussion on the Problem of Diphtheria Control in Crowded Institutions to be opened by Surg. Comdr. S. F. Dudley, R.N.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, May 1st.—5 P.M., Dr. E. P. Poulton: Experimental Study of Certain Visceral Sensations. (First Oliver-Sharpey Lecture.)
THURSDAY.—5 P.M., Dr. E. P. Poulton. (Second Oliver-Sharpey Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, April 30th, to FRIDAY, May 5th.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Tues., at 3 P.M., Clinical Demonstration by Dr. H. Cecil Bull.—ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C. Tues., at 1 P.M., Clinical Demonstration by Mr. Goulden. The above are free.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Course in Psychological Medicine, Lectures, Demonstrations, and Clinical Instruction.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Post-graduate Course in Dermatology, Clinical Instruction daily in the Out-patient Department. Practical Pathological Demonstrations will be arranged if desired.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Third week of post-graduate course in Medicine, Surgery and Gynæcology.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., 5.15 P.M., third Lecture demonstration in series on Electrotherapy, given by Dr. C. B. Heald.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh-gardens, N.W. Tues. and Thurs., at 2 P.M., Lecture-demonstrations in Tropical Medicine. Further particulars from the Secretary.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.
MONDAY, April 30th.—10 A.M., Dr. Dowling: Skin Dept. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M., Dr. Trevor Davies: Gynæcological Dept.
TUESDAY, May 1st.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Dept.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Dept. 10 A.M., Dr. Owen: Children's Medical Out-patients.
Special Lectures 4.30 P.M., Tuesday, May 1st: Dr. Dowling: Skin Diseases due to Protein Sensitisation.
Daily 10 A.M., to 5 P.M. Saturdays to 1 P.M. In- and Out-patient and Special Departments. Anæsthetic Course. Operative Surgery Course.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, April 30th.—2.30 to 5 P.M., Medical, Surgical and Gynæcological Clinics. Operations.
TUESDAY, May 1st.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Eye and Surgical Cases by Mr. N. B. B. Fleming and Mr. E. Gillespie respectively.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, May 1st.—5 P.M., Dr. A. Whitfield: Eczema.
THURSDAY.—5 P.M., Dr. H. G. Adamson: Acne Vulgaris.
FRIDAY.—5 P.M., Dr. A. C. Roxburgh: Warts.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, May 4th.—4 P.M., Mr. A. Wylie: Treatment of Diseases of the Larynx.

GRESHAM COLLEGE, Basinghall-street, E.C.
TUESDAY, May 1st.—6 P.M., Sir Robert Armstrong-Jones: The Need of Change and the Medical Aspects of the Health Resorts of England and Wales. (First of four lectures on Physic.)

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, May 1st.—4.15 P.M., Dr. A. E. Barclay: Some Pitfalls in Radiology.
FRIDAY.—4.15 P.M., Dr. J. Wharton: Demonstration of Ophthalmological Cases.

Appointments.

ADAMS, E. G. B., M.B. Lond., F.R.C.S. Eng., and BLATHWAYT, L.R.C.P. Lond., M.R.C.S., have been appointed Medical Referees for Bath, &c., County Courts (Circuit 52).
MCGIBBON, JOHN E. G., M.B., B.Sc. Lond., D.L.O., Hon. Assistant Laryngologist and Aurist, Royal Southern Hospital, Liverpool.
Certifying Surgeons under the Factory and Workshop Acts: HARRIS, V. C. J., L.R.C.P. Lond., M.R.C.S. (Whitehaven) and JAQUES, E. H., M.B., B.S. Durh. (Haltwhistle).

Vacancies.

For further information refer to the advertisement columns.
Barnsley, Mount Vernon Sanatorium.—Asst. Tub. O. £456.
Basingstoke, Hants, Park Prewett Mental Hospital.—Second Asst. M.O. £450.
Bedford Borough.—M.O.H., &c. £900.
Belfast, Queen's University.—Prof. of Pathology. £900.

rmingham City Infectious Diseases Hospitals, Little Bromwich.—3rd Asst. M.O. £350.
lingbroke Hospital, Wandsworth Common, S.W.—Hon. Phys.
righton, Royal Sussex County Hospital.—Cas. H.S. £120.
istol General Hospital.—Pathologist and Curator of the Museum. £500.
istol Royal Infirmary.—Hon. Surg. in charge of Ear, Nose and Throat Dept.
rnley, Victoria Hospital.—H.S. £125.
rdiff, Glan Ely Hospital.—Two Res. M.O.'s. £350 and £200 respectively.
rlisle, Cumberland and Westmorland Mental Hospital.—Med. Supt. £850.
ntral London Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—2nd Res. H.S. At rate of £75.
elmsford Administrative County of Essex.—Two Asst. County M.O.H.'s. Each £600.
lindale Hospital, Hendon, N.W.—Jun. Asst. M.O. £500.
xeter, Royal Devon and Exeter Hospital.—Asst. H.S. At rate of £100.
ji Government.—Dist. M.O. £500.
asgow, Woodilee Mental Hospital, Lenzie.—Jun. Asst. M.O. £300.
lden-square Throat, Nose and Ear Hospital, W.—H.S. £100.
llingly, Sussex, East Sussex County Mental Hospital.—Locum Tenens M.O. Seven guineas weekly.
ng Kong, University Faculty of Medicine.—Professor of Physiology. £800.
spital for Sick Children, Great Ormond-street, W.C.—Med. Reg. and Pathologist. £300.
ll Royal Infirmary.—Asst. H.P. At rate of £130.
eds Public Dispensary.—Hon. P. and Hon. S.
C.C. Mental Hospitals Service.—8th Asst. M.O. £300.
ince of Wales's General Hospital, Tottenham, N.—Clin. Asst.
therham Hospital.—H.P. £180.
yal Chest Hospital, City-road, E.C.—H.P. At rate of £100.
yal Free Hospital, Gray's Inn-road, W.C.—Asst. Phys. Also Ophth. Surg.
yal Naval Medical Service.—Surg.-Lieutenants. £453.
Bartholomew's Hospital.—Asst. P. to Children's Dept.
. Peter's Hospital for Stone, Henrietta-street, Covent Garden, W.C.—3rd Anæsthetist. At rate of £25.
ngapore Municipality, Straits Settlements.—Asst. Municipal Health O. $8,400.
fford, Staffordshire General Infirmary.—H.S. At rate of £200.
ke Newington Metropolitan Borough.—Part-time M.O.H. £700.
ke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Anæsthetist, Hon. Asst. Aural S., and Hon. Asst. Orthop. S.
dan Medical Service.—M.O. £E720.
alsall General Hospital.—Sen. H.S. At rate of £200.
est Ham County Borough, Dagenham Sanatorium.—Asst. Res. M.O.
indsor, King Edward VII. Hospital.—Hon. Asst. P.
olwich and District War Memorial Hospital, Shooters Hill, S.E.—H.S. £120.
rk County Hospital.—H.S. £150.
rk Dispensary.—Res. M.O. £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Carnwath (Lanarkshire).

Births, Marriages, and Deaths.

BIRTHS.

UGHAN.—On April 22nd, at Cromer, the wife of Dr. D. Vaughan, of a daughter.

MARRIAGES.

RVIS—CHADWICK.—On April 19th, at St. George's Church, Hanover-square, W., Walter Harvey Gervis, F.R.C.S., to Sibyl Adelaide Rowsell, daughter of Mr. and Mrs. Walter A. Chadwick, of Croydon.

RSONS—LAING.—On April 14th, at St. James' Church, Sussex-gardens, London, Henry Frank Parsons, M.R.C.S., to Margaret Josephine Laing, daughter of the late Lieut.-Colonel Laing, and of Mrs. Laing, Stoke Bishop, Bristol.

KER EVANS—HORNE.—On April 17th, at Holy Trinity Church, Folkestone, Hugh Roker Evans, M.D., B.S., to Winifred Mary Zoffany, younger daughter of the late Mr R N. Kensey Horne, of Tasmania, and Mrs. Horne of Bouverie-square, Folkestone.

DEATHS.

KINS.—On April 19th, at Cathay, Alumhurst-road, Bournemouth, Francis Thomas Atkins, M.R.C.S., aged 77.

RBORD.—On April 19th, Edward Augustus Harbord, L.R.C.P., M.R.C.S., of Fairfax-road, N.W.6, in his 71st year.

RKWOOD.—On April 22nd, at Wrentham-avenue, N.W., John Kirkwood, M.B., C.M., aged 54 years.

RMAN.—On April 18th, at Brecon House, Wantage, Berks, Thomas Norman, M.R.C.S., L.R.C.P., aged 45.

NGER.—On April 17th, at his son's residence, Ruardean, Glos., William Stanger, F.R.C.S. Eng., J.P., in his 84th year.

B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

IN correction of a statement made by Dr. H. Hilliard in THE LANCET of last week (p. 793) Mr. Frank Coleman ites that it was his father, Mr. Alfred Coleman, and not nself who, jointly with Dr. Hilliard, introduced the nasa thod of administering nitrous oxide.

Notes, Comments, and Abstracts.

HOSPITAL LAW.

LIABILITY OF HOSPITALS AND THEIR PROFESSIONAL STAFFS FOR TORTS.

BY CAPTAIN J. E. STONE, *M.C.*, F.S.A.A.,
HON. SECRETARY, INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS.

THE wrongs for which individuals seek redress consist of two main classes, those which result from a breach of contract, and those which arise from negligence or from wrongs committed, such being generally known as torts. A breach of contract consists in failing to do something that one has agreed to do, or in doing something that one has agreed not to do. A tort consists in doing something to the prejuduce of another which one ought not to do, or doing some rightful act but in a negligent or wrongful manner, time, or place, or by failing to do what ought to be done, thereby causing suffering or injury to another.

Contracts are quite definite in form when they are written and specifically indicate what is or is not to be done. Failure to live up to a written contract is quite easily determined and in general this is equally true with regard to certain forms of implied contracts which are not so definite as written contracts. In the case of torts there is considerable indefiniteness. When is a man injured in his property, person or rights? How much is he injured? Is the person causing the injury chargeable with negligence? What is negligence? All these are practical questions that arise in each individual case. The tendency of the law of torts is to give the plaintiff relief only if the defendant was culpable in some way. It must be proved that the defendant intended to damage the plaintiff, or that he might have avoided damaging him by using the proper amount of care, or that he was engaged in an unlawful act at the time the plaintiff suffered the injury. The standard of care required is that of ordinary prudence.

Contracts v. *Torts.*

There are, therefore, two phases of the question which require to be considered—liability for contracts and liability for torts. It may be said that, generally speaking, in the manner of contracts the hospital is liable for the acts of its authorised agents. If an officer of a hospital acting under authority engages or contracts to do anything, it is clear that the hospital is liable for damages caused by the failure to perform its part of the contract. If the officer proceeded without authority he would himself be liable. It is not an interference with the rights of charitable institutions to compel the authorities thereof to fulfil obligations freely and lawfully entered into.

The difference between actions based on contract and actions in respect of torts must be noted. If it can be proved that a hospital agreed to give certain services to a patient and failed to give them or is not competent to give them, it is possible that the patient would be able to recover damages, whereas in the absence of an express or implied contract he could not recover if the case was taken on the basis of liability for torts. Here it may be noted that in general an action for tort will lie against a corporation whenever it will lie against an individual, so the mere fact that a hospital is incorporated is not sufficient to relieve it from liability.

Since, however, most cases do not arise under liability for contracts, the main subject to be considered in connexion with the liability of hospitals is the liability for torts. It is perhaps some tribute to the general efficiency of the hospitals of this country that the reported decisions on hospital and professional negligence are very few. It has been said that the protection afforded to charitable hospitals in the past has been because of the public and the charitable service which they render. A second reason may be that since the funds of the hospital had been given in trust for a charitable purpose they could not be diverted to pay judgments, and they would be diverted even though the judgments might be paid from earned income, patients' contributions, &c. Another reason advanced was that patients accepting the charity of the hospital were thereby held to waive any right for damages which might be suffered by them. These contentions, however, cannot be upheld; in fact, exemption of liability on such grounds would work against the very interests which the donors had in making bequests to the hospitals.

What Constitutes Negligence?

As the liability of the hospital depends upon whether the doctor or nurse attending the patient has been guilty of negligence, it is necessary to consider what in law constitutes

negligence, for it is obvious that if an action against the person causing the injury fails, no action will lie against the hospital.

Negligence is a relative term, and conduct which would be considered negligent in some circumstances might well be considered as coming under the heading of due care in others. There are no legal degrees of negligence. It is negative rather than positive and implies the absence of the care, prudence, or forethought required. Exceptional obligations of care and caution may be required in certain cases, and in establishing negligence it must be shown that an existing duty has not been performed. That is, the party complaining must point out how the duty arose which is alleged to have been neglected. After the duty has been pointed out, the failure to perform it must be proved—that is, the existence of the negligence. The presumption is that the individual will perform his duty until the contrary is shown.

One may become liable in tort by actually doing to the injury of another something that should not be done; by doing something the individual may rightly do, but wrongfully or negligently doing it by such means, at such time, or in such manner, that another is injured; or by neglecting to do something which ought to be done, whereby another suffers an injury. The first is an active wrong which may be done by the party in person or by some other person for whose conduct generally or under the particular circumstances he is responsible. A person is always responsible for the conduct which he counsels, advises, or directs, and for whatever naturally results from his counsels.

Professional Skill.

Of course, unreasonable requirements cannot be enforced upon a hospital or any member of its professional staff. Neither a hospital not a physician is liable for a failure to give the best that the world affords. They are required to give the best at least that the facilities and medical knowledge of the immediate community afford. A hospital in a small town remote from great medical centres would possibly not be held responsible for as many things as would one centred in a metropolitan area. If the hospital does the best it can with the lights and facilities it has, the rule of reason is satisfied; hospitals and their staffs cannot be held liable for acts or omissions when in the exercise of their judgment they did what they considered best for the patient—e.g., failure to perform an operation, although a post mortem should disclose that an operation would have saved the life of a patient, should not create liability. Lack of supreme knowledge or mistake in medical judgment cannot create liability, unless in any case it is proved that the circumstances were such that there was negligence.

The law may be stated thus: A physician or surgeon is in the same position in this respect as any other professional man; he does not undertake that he will perform a cure, nor does he undertake to use the highest possible degree of skill, but he does undertake to bring to his task a fair, reasonable, and competent degree of skill. A physician or surgeon is not answerable merely because some other practitioner might possibly have shown greater skill and knowledge or even used some greater degree of care, so long as he showed due care and a competent degree of skill and knowledge. In order to give rise to criminal liability the negligence must be of such a nature that it can be brought under the heading of wilful negligence. The law extends to the medical profession the greatest possible protection, and if a member of the profession acting bona fide takes an erroneous view of a case or commits an unintentional mistake, he cannot be made criminally liable, whatever the consequences of his error may be. So if a surgeon bona fide and honestly exercising his best skill to cure a patient performs an operation which causes the patient's death, he is not guilty of manslaughter. The authorities are clear that in a prosecution for criminal negligence, the question whether the accused was or was not a duly qualified practitioner is not in itself a material element in ascertaining his liability.

A less degree of incompetence or negligence will support an action for damages. In such a case the question is not whether there was a wilful intention, but whether the injury complained of was due to the absence of reasonable care and skill. In one such case damages were recovered by a patient who lost his hand in consequence of improper treatment founded on a mistake as to the nature of the injury.

TREATMENT OF GUN-SHOT WOUNDS BY AMBROISE PARÉ.

IN publishing last week the translation of an article on the Treatment of Gun-shot Wounds and the Improvement Thereof by Ambroise Paré, we should have stated that the original paper was contributed by Prof. Theodore Meyer-Steineg to the German edition of the Cartellierii Festschrift. This book was published by Böhlau at Weimar in 1927, price 10 marks.

SWISS CLIMATES.

To the Editor of THE LANCET.

SIR,—I should be grateful if any of your readers who ha a knowledge of Switzerland could recommend as a permane residence the most suitable locality for a sufferer from gou arthritis and occasional bronchitis.

I am, Sir, yours faithfully,

April 23rd, 1928. A. M. C.

CONVALESCENT SERUM IN POLIOMYELITIS.

DURING an epidemic of poliomyelitis in Sweden in 19 Dr. H. Davide [1] inoculated a number of exposed villag with serum from convalescents. His method was to dr off blood at about the tenth day, when the fever had d appeared, and after a Wassermann test the serum w separated, mixed with 0·5 per cent. carbolic acid, and p up in 5 c.cm. ampoules. He considers that there is danger of transmitting the disease with serum, as all t evidence is against the presence of the virus in the bloo Selecting an area which his observations told him was like to be visited by the epidemic, he inoculated 73 persons und 25 years of age, and also observed 84 others as contro Among his controls 14 were attacked, either by the typic or by the abortive form; of the inoculated group one alo caught the disease. This was a boy of 4, who was presumab infected before inoculation, for the onset occurred only hours afterwards. He suffered from stiffness of the ne and possibly from pyrexia (though his temperature w never taken) for 12 hours, after which he complete recovered. Four inoculated infants escaped, though th young nurse succumbed.

Experiments [2] on the therapeutic use of serum have be made in Roumania with serum prepared by the Paste Institute by Pettit's method. The doses were much larg than Dr Davide's, being 20 c.cm. intrathecally and 20 c.c intramuscularly, repeated after four to six days. Ve severe cases are reported to have been checked, but detailed reports are given.

TREATMENT OF HYDROCYANIC POISONING.

Dr. J. A. Pique [3] recently reported a case of poisoni by potassium cyanide treated by intracardiac injection sodium hyposulphite. A child of 19 months poisoned itse with cyanide whilst crawling on a verandah which had be sprinkled with the drug to kill the ants. The mother once gave it sugar in water and within 15 minutes broug it to the hospital. On the way it vomited and becan unconscious. It showed the normal signs of cyani poisoning on admission, was unconscious, and convuls with slight opisthotonos; the respirations were 7 per minut and no pulse was detected. As the case seemed despera Dr. Pique injected into the heart 15 c.cm. of 10 per cer sodium hyposulphite solution and 1 c.cm. of adrenal 1/1000, giving also oil of camphor and caffeine by the ski The effects were immediate; in three minutes the pul reappeared, the breathing became free, and convulsio ceased. Lavage produced food with a smell of bitt almonds. Though the case is a remarkable one, it cann be held to prove the value of sodium hyposulphite; indee the rapid efficacy of the treatment suggests that it w the adrenalin which turned the scale, assisted by the fa that sugar had already been given. Taylor [4] mentio the value of sugar and says that sodium thiosulpha has been recommended; the hyposulphite seems not have been used in England but has been recorded as value in foreign journals. Whatever view we may take the value of the drugs employed, the success of the trea ment in such a desperate case indicates very strongly t desirability of employing the intracardiac route and t same combination in similar emergencies.

[1] Bulletin Mensuel d'Hygiène Publique, 1928, xx., 56.
[2] Ibid.
[3] Semana Médica, Feb. 2nd.
[4] Forensic Medicine, 1928.

QUEEN ALEXANDRA MEMORIAL.—The appeal f the Scottish National Nursing Fund Memorial to Que Alexandra has now been closed. The sum at prese declared is £87,000, but the final figure is likely to rea about £90,000. The original proposal, launched in 192 was for £150,000, to be used in augmenting the funds of t Scottish Branch of the Queen's Jubilee Institute for Nurs at Edinburgh, less 25 per cent. for local nursing service The highest individual subscription was £1,000, so that t great bulk of the sum raised was obtained in small amount

Observations
ON
PURPURA OF THE URINARY TRACT

Based on a Presidential Address delivered before the Section of Urology of the Royal Society of Medicine

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(*With Coloured Plate.*)

SINCE 1912 I have met with a considerable number of cases of purpura of the urinary tract and for my present purpose have analysed 24 of them.

Purpura is characterised by spontaneous extravasations of blood into the skin, mucous membranes, joints, retinæ, and interstitial tissues. The resulting lesions in skin or mucous membrane are called petechiæ. These are blood-red or purple spots and patches which may be rounded, ovoid, linear or irregular in shape, and vary in size from that of a pin's-head to patches nearly half an inch in diameter. Occasionally they assume the character of large bruises or even hæmatomata. They do not disappear on pressure, but in a few days they turn brown and then fade away altogether. Hæmorrhages can also be observed in the interstitial tissues of the viscera in cases of purpura or "the hæmorrhagic disease," as it is often called. That hæmaturia is of common occurrence in cases of purpura has been recognised for many years, but it is remarkable that petechiæ in the bladder should have escaped recognition by cystoscopists for so long.

I have included in these 24 cases only those in which it has been possible to prove the condition to be one of purpura. All of them came up as cases of hæmaturia for diagnosis of the possible cause. Many of them presented petechiæ on the skin. The majority presented petechiæ in the bladder as viewed by the cystoscope. Some of them showed petechiæ in the mucous membrane of kidneys removed for dangerous hæmaturia. Some presented joint swellings, presumably due to extravasation of blood into the joints. Others had bleeding from the bowel, nose, or teeth, and one had nephritis. During the same period I have met with a number of cases of hæmaturia in which the bleeding observed to come from one or both kidneys has cleared up, and the clinical course has suggested that the condition was one of purpura of the kidney. As in such cases absolute proof has not been possible, they have not been included in the analysis. But I feel sure that such purpuric bleeding from the kidney is not uncommon, and explains many cases of painless hæmaturia. A purpuric bladder is always painful, but a purpuric kidney usually causes no pain.

The observations suggest that purpura of the urinary tract can be classified into three main clinical groups :—

(1) *Purpura simplex*, which exhibits a single or a few mild attacks of hæmaturia, soon clearing up and not thereafter repeated.

(2) *Purpura recurrens*, which exhibits repeated severe attacks over a period of years and which may gradually react to treatment.

(3) *Purpura fulminans*, where one or two severe attacks appear within a short time of one another and lead to death within a few weeks or months.

Purpura of the urinary tract appears in two clinical guises :—

(1) *Vesical*, with sudden onset of profuse painful hæmaturia, but with little or no systemic disturbance. The diagnosis can be readily made by immediate cystoscopy, and the prognosis is good.

(2) *Renal*, with sudden onset of profuse painless hæmaturia and little symptomatic disturbance apart from severe loss of blood. The cystoscope reveals blood pouring from one or both kidneys. Pyelograms are normal. The diagnosis is made in some cases by nephrectomy, in others by the presence of purpura elsewhere in the body, by the examination of the blood, or by the tourniquet test. Often the diagnosis can only be provisional.

DIAGNOSIS.

For a long time it has been the custom in urological circles to talk of "essential hæmaturia," a term which begs the question and obstructs research. I prefer to speak of "cases of hæmaturia of which the cause has not been determined." I believe that a number of the cases usually labelled essential hæmaturia are in reality cases of purpura of the kidney, that purpura is not at all an uncommon cause of hæmaturia from the bladder or the kidneys, and that its nature is missed either because cystoscopy is not carried out at an early period when petechiæ could be observed in the bladder, or because, where pain and petechiæ in the bladder are absent, there is usually no occasion to remove one kidney, and so the purpuric nature of a bleeding kidney cannot be determined by direct observation. In all cases of unexplained hæmaturia a rigid examination of the skin, joints, retinæ, and the hæmopoietic system may reveal the true nature of the case. It is the rule for the patient to have failed completely to notice even quite large petechiæ on the skin, so that these need to be sought for specially. The diagnosis can be readily made if cystoscopy be carried out within a day or two of the bleeding and if the bladder is then seen covered by petechiæ. In these cases the hæmaturia is painful. Neoplasm is excluded if an early cystoscopy reveals profuse bleeding from one kidney, and a pyelogram shows a perfectly normal outline to the pelvis of that kidney. In these cases the hæmaturia is usually painless. If the blood shows a marked diminution or absence of platelets, prolonged bleeding time, normal clotting time, or the presence of a characteristic non-retractile fibrin in the clot, then the diagnosis of thrombocytopenia purpura can be confidently made. If petechiæ are observed in other parts of the body the diagnosis is at once apparent. The static resistance test of Hess may throw light on the diagnosis. A tourniquet is applied for three minutes to one arm; in cases of purpura this should produce purpuric spots on the skin of the arm. Even so, a large number of cases must remain not proven, but if it is once recognised that painless purpuric bleeding from one or both kidneys is not uncommon, then the minds of urologists will be set at rest. It has been the fashion to insist that the commonest cause of unilateral hæmaturia is a neoplasm, but it is doubtful if neoplasm of the kidney is as common as has been taught. With this teaching in his mind the urologist has been rendered too anxious, and has been inclined too readily to remove a bleeding kidney in case he might be missing an early neoplasm. The results of removing a large late neoplasm of the kidney are on the whole disappointing, and the only chance of permanent cure resides in making the diagnosis of malignant kidney before the tumour has become so large as to be palpable. Again, it is in the highest degree unwise to open a kidney at operation to see if it contains a neoplasm. If it does and if it has been opened, recurrence within a year or less is almost invariable. If a surgeon is to get permanent results and any real cures of neoplasms of the kidney, he must make up his mind as to the diagnosis before he starts the operation, and must remove the kidney intact within its perinephric and fatty capsule. If the capsule is torn—apart from any incision of the kidney—an early recurrence is the rule rather than the exception. These considerations have led urologists in the past 20 years to remove a large number of kidneys suspected of neoplasm when none was present. Many of these cases were in all probability cases of purpura.

The remedy lies in recognising that neoplasm of the kidney is comparatively rare and is by no means a common cause of hæmaturia. Pyelography, repeated several times if necessary, should invariably be carried out in all cases of unilateral hæmaturia. If the pyelogram shows no evidence of neoplasm it

should be trusted and the patient kept under observation and the kidney left alone. Provided the hæmorrhage is not alarming no harm can be done by waiting and taking repeated pyelograms at intervals of two to three months. In some cases the hæmorrhage is so severe as to endanger life, and it will be necessary to operate. In seven cases I have had to remove the kidney for grave hæmaturia due to purpura, and in one of my cases of purpura of the bladder a bleeding kidney had been previously removed by another surgeon. I am certain that I have left in situ quite a number of purpuric kidneys, where I have observed unilateral hæmaturia and repeated pyelograms have been negative. In some cases the hæmaturia has been repeated several times, in others it has never been repeated. I have also removed a certain number of profusely bleeding kidneys wherein no purpuric lesions could be seen in the pelvic mucous membrane, but where on section a certain amount of interstitial hæmorrhage was apparent lying between the tubules. I believe that these cases should be classed in the same group and should be considered as instances of interstitial hæmorrhage into a viscus caused by purpura or "the hæmorrhagic disease."

Differential Diagnosis.

The differential diagnosis from other causes of vesical bleeding, especially hæmorrhagic or tuberculous cystitis, is readily made by the cystoscopic observation of petechiæ scattered throughout the bladder, in between which the mucous membrane appears healthy (Fig. I.). The differential diagnosis from other causes of renal bleeding is more difficult. Common causes, such as infection by the colon bacillus, or the tubercle bacillus, calculus, and hydronephrosis, are detected by the usual routine methods. Less common causes of renal bleeding are a high systolic blood pressure, which may be associated with petechiæ on the skin, with or without "granular" kidney; the various anæmias and leukæmias; and polycythæmia. The size of the spleen should be estimated by palpation, percussion, and X ray examination. It must be clearly emphasised that in all cases of hæmaturia a most rigid and exhaustive study must be made of the blood, including the clotting time, bleeding time, and a platelet count. By this means not only can cases of thrombocytopenia be marked off and if necessary treated by splenectomy, but it may also be possible to separate off cases of aplastic anæmia, pernicious anæmia, leukæmia, cholæmia, and early cases of polycythæmia. I have met with three cases of polycythæmia where profuse unilateral hæmaturia was the earliest symptom. In the first I removed the bleeding kidney, in the other two, taught by experience of the first case, I was able to make the diagnosis by examination of the blood.

Scurvy may be mistaken for purpura and is in all probability an instance of a true purpura where the cause is known—namely, vitamin C deficiency due to lack of fresh fruit and vegetables. The platelets are not deficient in numbers. Hæmophilia can usually be distinguished by its hereditary nature, its history, and the fact that the clotting time of the blood is delayed, whereas the clot itself is normal and there is no deficiency of blood-platelets. Hæmoglobinuria is distinguished by expert examination of the urine. One of the commonest causes of profuse hæmaturia is acute pyelitis. The sudden onset with a rigor and high fever, the presence of pyuria as well as bacilluria, the enlarged tender and painful kidney, and the quick response to alkaline treatment should differentiate pyelitis from purpura.

Blood Platelets in Relation to Purpura.

Denys, a Belgian histologist, called attention in 1887 to the fact that in some cases of purpura there was a low platelet count. Hayem in 1890 confirmed this and made the following observations:—

(1) That there was no appreciable change in the red blood corpuscles.

(2) That there might be a considerable diminution in the number of platelets and that those present might be of "giant type."

(3) That there was no constant change in the leucocytes

(4) That the blood coagulated in normal time, but tha the fibrinous reticulum developed as fibrin of unusual siz did not retract from the walls of the glass vessels into whic the blood had clotted, and did not squeeze out the seru from the clot.

In 1912 Duke called attention to an addition fact—that though the clotting time was normal, ye the bleeding time of a pin-prick might be considerabl prolonged. A prick which should cease to bleed i three minutes might bleed for as long as an hou He studied the platelets in 31 cases and in 14 he foun a platelet count below 65,000 per c.mm. of blood, th normal being 200,000 to 300,000. If the platel count was below 10,000 the case was severe, if belo 1000 very severe. Ledingham and Bedson advance these observations further by work on guinea-pig rats, rabbits, and goats. They showed that a antiguinea-pig platelet serum produced purpura i guinea-pigs and also an early extensive fall in th platelets; if recovery ensued the platelets rose agai to normal. The effect was specific and was no produced by heterologous sera. An antiplatel serum had no effect on the leucocytes and a antileucocyte serum had no effect on the platelet yet both would produce a partial clumping of the re blood cells. Antiplatelet serum contains a specif antibody for platelets, and this supports the vie that platelets are independent elements of the bloc and bear no relation to the red cells or leucocyte Platelets appear to supply an indispensable thromb genetic element, and if this is reduced the animal liable to purpura. These results have since bee confirmed by Lee and Robertson, Gottlieb, ar Watabiki. Duke produced purpura in rabbits b repeated injections of diphtheria toxin and benzo which destroy platelets.

Purpura in man has been noted after injectio of salvarsan (Anwyl-Davies, Labbé and Langlo Wydooghe and Ferond). It has also been observed benzol poisoning (Anderson, Boyd, and Jackson, ar in iodine poisoning (Stephen Mackenzie). I ha observed it in two cases after injections of strept coccal vaccine. General purpura has been provok in rabbits by repeated doses of X rays (Lacassagn Lavedan, Léobardy). Frank again called the attenti of clinicians to the low platelet count in some cases purpura and suggested the term thrombocytopen for this class of case. Kaznelson observed a case purpura with thrombocytopenia where the spleen w enlarged. Arguing that the enlarged spleen might b actively destroying the platelets, he had the sple removed at operation by Scloffer, with complete cu of the patient. In 1918 and in 1919 he report further cases of successful splenectomy for this troub Hitzrot reported further cases and Edwin Be reported five cases of splenectomy for this class purpura, four of which were successful, and states th some 50 cases have now been reported in the literatu of splenectomy for thrombocytopenia with t hæmorrhagic diathesis or purpura. He considers th splenectomy can only be of avail in purpura recurre and not in purpura fulminans. In some of Bee cases the number of platelets increased after splene tomy, but dropped again in course of time; t hæmorrhages did not recur, however, and the patie appeared to be cured. Brill and Rosenthal noted t same after two cases of splenectomy. This fits with the observation of Service, who cured a case diabetes with low platelet count of the bleedi tendency by insulin and repeated blood transfusio Yet the blood-platelets remained low. Beer cou produce no evidence by examining the blood fr the splenic vein and artery that the spleen did destr platelets. Yet the removal of the spleen appears remove the tendency to hæmorrhage.

The Problem of Causation.

The heart of the problem still awaits solutio Brill and Rosenthal suppose that the spleen must some way cause the capillary walls of the bloc vessels to become sensitive to circulating toxi They say the platelets are not directly concerned

ausing the bleeding tendency. Beer suggests: 1) that there is a defective formation of platelets n the bone-marrow; (2) that circulating toxins estroy the platelets; (3) that the spleen destroys he platelets. None of these hypotheses covers all he facts. Spence has analysed 101 published cases of plenectomy for purpura. The bleeding tendency was ured in 69 and 21 died of the operation. He agrees vith Beer that splenectomy is only suitable for chronic elapsing cases. He divides the cases into three types n an ingenious attempt to formulate a theory of the ction of the spleen and reticulo-endothelial system n causing purpura. Giffin reports from the Mayo linic a number of cases of unusual types of hæmorhagic disease which serve to show that the problem f causation can best be solved by further research on linical cases. Conner and Bumpus conclude that here is not enough evidence at hand to prove that ssential hæmaturia is ever localised purpura, or due o a deficiency of blood-platelets, but the evidence ather suggests that this is true in some cases.

Local Infective Foci as a Cause.—It appears that here there are several different types of purpura, vith differing causation, but that in a number of cases a local focus of infection can be found if carefully ought, and its removal may cure the tendency to æmorrhage. The infection is most likely to be due o a streptococcus, but it may probably be due to any acterium, such as the colon bacillus, *Staphylococcus ureus*, pneumococcus, meningococcus, and the viruses f small-pox or measles. The local focus is most likely o be found in the teeth, tonsils, accessory air sinuses, iddle ear, or bowel. Bradburn reports a case of urpura cured by removal of septic teeth, and in a umber of the cases reported above and in those reported y Moreland McCrea the removal of septic teeth or eptic tonsils appeared to lead to a cure. In three of ıy cases purpura developed the day after the extracion of septic teeth, and in another after the removal f septic tonsils. Similar happenings have been eported by Kleeblatt (teeth), by Robson after the emoval of a rusty nail from the foot, by Kretschmer fter an operation for osteomyelitis, by Clay and olden after an operation for mastoiditis. Wadsworth eported a case of bilateral renal calculi with streptoocci and pyuria that developed purpura. I have bserved two cases of severe purpura in women ssociated with pyelitis due to the colon bacillus. n each case renal lavage cured the condition.

Classification.

Attempts to classify the purpuras too closely on a linical basis seem apt to lead to confusion. The mplest way to look at the condition is to realise that urpuric bleedings in any situation are only a symptom nd not a disease; that adequate classification will nly become possible when a large number of different auses that may give rise to the symptom of purpura ave become adequately recognised and proved; hat purpura in the skin can be associated with leedings into any mucous membrane or viscus, and hat the cases can fall clinically into three main groups: mple, recurrent, and fulminating. The best classication so far attempted appears to be that of Brill nd Rosenthal. This has been somewhat modified elow in the light of further clinical observations made n the last few years. In the first place, all cases of urpura can be classified by an examination of the lood into two main groups: (1) the thrombo-ytopenic, (2) the non-thrombocytopenic. In both is possible that injections of sera, blood, and roteins may do good, but it is only in the first group hat splenectomy has so far been employed with uccess.

In the second place, cases of purpura may be classified nto: (1) those in which a proximate cause is pparent and which may be removable; (2) those in hich the cause is unknown.

(1) Those in which a proximate cause is apparent.

(*a*) *Bacterial Poisons.*—Streptococci, staphylococci, pneuococci, meningococci, small-pox, measles, acute rheumatism, cal infective foci in teeth, tonsils, sinuses, middle ear and owel, trench nephritis (Stevens and Peters), pyelitis.

(*b*) *Chemical Poisons.*—Turpentine, quinine, belladonna, iodine, benzol, arsenic, salvarsan, snake venom.

(*c*) *Intrinsic Metabolic Poisons.*—Cholæmia, anaphylactic agents.

(*d*) *The Poisons Generated in Diseases of the Hæmopoietic System.*—The leukæmias, aplastic anæmia, pernicious anæmia, Banti's disease.

(*e*) *Vitamin Deprivation.*—Scurvy, rickets.

(*f*) *Functional Changes in the Walls of the Blood-vessels.*—Schindler has reported two cases in victims of religious mania which were cured by suggestion.

(*g*) *Changes in Blood Pressure.*—High blood pressure, senile purpura, purpura of the menopause.

(2) Those in which the cause is unknown, so-called idiopathic purpura or the hæmorrhagic disease.

Prognosis and Treatment.

In the 24 cases analysed the 16 vesical cases all recovered quickly, four of the nephrectomy cases recovered completely, two of the nephrectomy cases still suffer from mild recurrent attacks of hæmaturia but are definitely improved, and two died in a few months despite nephrectomy. Stephen Mackenzie states that most cases of purpura recover in the end, but that 15 per cent. die chiefly from nephritis, endocarditis, or loss of blood.

In 8 of 24 fulminating cases and cases with grave hæmaturia it was necessary to resort to nephrectomy. In the mild cases, especially in children, the treatment most likely to prove efficacious seemed to be to give 25 c.cm. of antistreptococcal serum by the mouth every 48 hours for two or more doses, and to attend to the teeth and tonsils. The serum when given by the mouth did not appear to lead to anaphylaxis, and it certainly produced as profound an effect as when given under the skin. Calcium lactate appeared to have no ameliorating action. Possibly an active preparation of parathyroid gland with calcium might give better results. In all cases it is probably wise to give large doses of alkalis according to Blum.

Most marked benefit was obtained in the majority of relapsing cases by giving antistreptococcal serum by the mouth three times in a week every two or three months. At the same time all teeth shown by the X rays to be diseased were dealt with in easy stages, and the tonsils, if diseased, were enucleated. In one case removal of a heavily infected appendix cured the trouble, and in two others an intestine heavily infected with *Streptococcus fæcalis* received treatment, and with the diminution of the streptococcus in the stools the tendency to hæmorrhage disappeared.

Autogenous streptococcal vaccines were used in two cases. In small doses they did no harm, but effected no real improvement. If the dose was too large it at once produced an attack of purpura.

If no local focus of bacterial infection can be detected in the teeth, throat, upper air passages, and bowel, resort should be had to the more severe methods, which are, in order of increasing severity: auto-serotherapy, direct transfusion of homologous blood, protein shock therapy, and splenectomy.

Effect of Serum.

Weil, in 1905, showed that in cases of hæmophilia the blood could be rendered normal for a time by subcutaneous injections of normal horse serum; surgical operations could be safely carried out in hæmophiliacs after the injection of horse serum, and bleeding could be stopped in the same manner after operation in hæmophiliacs who had not previously had injections of serum. Nolff in 1909 showed that bleeding in hæmophiliacs and in hæmoglobinurics could be stopped by subcutaneous injections of peptone. Widal found that similar results could be obtained in some cases of purpura; that injections of serum and peptone stopped hæmorrhage at once, and if repeated might cure these conditions.

In a number of the cases reported above subcutaneous injections or oral administration of normal horse serum or of antistreptococcal serum were given, and in the majority quickly checked the hæmorrhage. Repeated injections greatly diminished the severity of the attacks and rendered recurrences less frequent.

Yet in some cases, despite repeated injections, the attacks continued to recur, although in a less severe form and at longer intervals.

Widal announced later that the action of the serum or peptone was probably non-specific and acted by producing a colloido-clasic crisis; that any foreign protein introduced into the circulation might produce a favourable result, even the injection into a muscle or under the skin of the patient's own blood, which apparently acts as a foreign protein (auto-sero-therapy). However these injections may act, there can be little doubt that they should be the second line of attack in dealing with purpura. Favourable results have been reported in purpura after the subcutaneous or intramuscular injection of horse serum (Stern, &c.), antistreptococcal serum, peptone, sterilised milk (Gram), and even the patient's own blood (Widal, Emsheimer, Howard). The results are not, however, uniformly successful. Resort may then be had to intravenous injections of whole human blood from a suitable donor. Should such treatments prove ineffective, then splenectomy should be considered, as brilliant results have been reported in a number of cases. Splenectomy has so far been reserved for cases of true thrombocytopenia and should only be employed in severe recurrent cases, not in simple or fulminant cases. Giffin's recent work suggests that splenectomy may sometimes be advisable when there is no thrombocytopenia.

Other Remedies.

Some writers have reported good results from subcutaneous injections of adrenalin in repeated doses. Others state that small doses of turpentine may do good. Morris reported a case in China in 1916 cured by emetine hydrochloride; another successful case was reported by Plantier, of Algiers. Blum and Szabo advise large doses of alkalis in cases of bladder purpura to render the urine alkaline. They state that urine contains pepsin which in acid urine may cause digestion of the hæmorrhagic areas and the formation of "peptic" ulcers. The alkali is said to render the pepsin inactive. Oppenheim states that he cured a case by radiation with a quartz lamp. Suggestion has been employed in the cure of hysterical cases (Schindler).

Illustrative Cases.

Purpura Simplex; Purpura of the Bladder.

Case 1.—A girl, aged 12, admitted to the London Hospital on Nov. 30th, 1910, stated that on the evening of Nov. 28th she felt a sudden desire to pass water, and during the act experienced a sharp stabbing pain, starting in the left iliac region and spreading into the vulva. Between 8 P.M. and 9.30 P.M. she passed water four times, each time noticing a similar pain, which lasted only as long as water was passing and ceased at once at the end of the act. At 9.30 P.M. she passed water again, and this time inspected it. It was full of blood. An aching pain came on in the left iliac region when she went to bed, and lasted all night and the whole of the next day. Urine was passed once in the night and five times during the next day until the time of admission into the hospital at 5 P.M. on Nov. 30th.

Previous Health and Habits.—Diphtheria five years ago, otherwise no serious illness. No hæmophilia, no scurvy. The patient lives in Poplar, amongst poor and unhealthy surroundings. She has had a sore-throat for some days before the onset of the hæmaturia, and has felt "out of sorts."

Examination.—The patient looks ill and is pale and anæmic. The temperature is normal, pulse- and respiration-rate are normal, the tongue clean and moist, the heart, lungs, and alimentary system normal. There is follicular tonsillitis on the left side, and some slight enlargement of the glands on the left side of the neck, which are tender to the touch. The skin shows no petechiæ, and the gums are healthy. There is deep tenderness over the bladder region, especially on the left side. The urine is full of blood-clots, and contains bright red blood diffused throughout.

The patient was at once taken into hospital and put to bed. By the next morning the bleeding had ceased and the pain had disappeared.

Dec. 1st, 1910: X ray examination of bladder and kidney areas shows an absence of stone shadows. The urine is clear to the naked eye, 38 oz. in 24 hours, the reaction acid, specific gravity = 1021, no albumin, urea 2·5 per cent. Hæmo-renal index (electrical resistance of urine and serum) = 1·5 (normal 2).

Dec. 2nd, 1910. *Cystoscopy.*—The bladder was filled wi 8 oz. of oxycyanide of mercury solution, 1 in 4000. Bo ureters appeared healthy. The bladder wall for the great part appeared pale and healthy, but scattered irregular over fundus and trigone were patches of submuco hæmorrhages varying in size from a pin's head to a sixpenc The patches were of all shapes and sizes, some linear, son stellate. The greater number were scattered over the fundu There was no ulceration and no sign of miliary tubercle I came to the conclusion that I was either dealing with purpuric condition of the bladder wall, or that I had caug a primary blood infection of tuberculosis at its very onse

On Dec. 5th and again on Dec. 6th a 24-hour specimen urine was examined for tubercle bacilli and for pus cells, b none was found. The Pirquet tuberculin reaction w positive.

The urine remained clear until Dec. 9th, when anoth attack of pain and bleeding came on exactly similar to t first one. This lasted two days and then cleared up co pletely. Throughout the whole time the patient was hospital the temperature remained normal, and there we no signs of constitutional disturbance except that t patient felt below par.

Dec. 15th, 1910. *Cystoscopy.*—No pain, no increase frequency, no blood for four days. The picture had chang completely; the bladder was quite healthy again save f faint patches like fading bruises on the wall of the fund and also about an inch above the middle of the bar Mercier a small fading hæmorrhagic patch in which a sm blood-vessel ran and was lost.

Dec. 16th, 1910. *Blood Examination.*—Coagulation tim five minutes. Red blood corpuscles 5,000,000. Hæmoglobi 85 per cent. Colour-index, 0·8. White cells in norm proportions.

Course.—Calcium lactate grs. 10 three times a day w administered for a week, and the patient left the hospital Dec. 19th restored to health, and has since had no return the bleeding.

*Purpura Simplex; Purpura of the Kidney.**

Case 2.—A woman, aged 38, was admitted under m care at the London Hospital on Dec. 18th, 1916. S stated that three weeks previously she had develop active incontinence of urine and strangury. Six wee later the strangury had suddenly ceased and she had beg to pass large quantities of blood in her urine. This h continued on and off ever since.

The patient appeared wasted and anæmic, but exhibit no physical signs. The urine contained a large quantity blood and numerous coliform bacilli in pure culture, but r pus or casts. The blood showed no changes except those secondary anæmia. Cystoscopy revealed blood pouring o of the right ureter in cascades. The urine from the le kidney was natural. X ray examination was negative.

On Dec. 19th, 1916, the right kidney was removed, as a early tumour was suspected. Examination of the kidn showed large purpuric spots and patches under the muco membrane of the pelvis. No other changes could be discover except slight degeneration of the cells of the collectin tubules.

Purpura Recurrens; Purpura of the Kidney and Bladder.

Case 3.—A single woman, aged 40, was examined May, 1925. Her doctor stated that in June, 1924, she ha suffered from strangury, pain in left kidney, and bacteriuri and in November, 1924, had had a second attack. Sinc January, 1925, there had been increased frequency, pain o passing water, and constant aching pain in left kidney. Fo six weeks she had been confined to bed with slight feve 99·5° F., and profuse sweating, daily growing more ill an anæmic. No pus or bacteria could ever be found in urin Recently she had had profuse hæmaturia, which led h doctor to call for further advice.

On examination the left kidney was considerably enlarge and tender, and the urine was full of blood. X ray examin tion for stone was negative.

On May 27th, under ether anæsthesia, cystoscopy show that the bladder mucous membrane was covered with lar purpuric patches between which the mucous membrane w healthy. Blood was pouring in cascades from the left urete A specimen obtained by catheter from the right kidney w natural and of good functional value. As the bleedin seemed grave and increasing in severity day by day, it w decided to remove the left kidney.

On opening the kidney after its removal it was found t contain a large number of purpuric spots and patch beneath the pelvic mucous membrane. No other pathologic changes could be found.

The patient was given three doses of 25 c.cm. of ant streptococcal serum by the mouth at intervals of 48 hour

* This case was described in my book, "Common Infectio of the Kidney," 1920, p. 287.

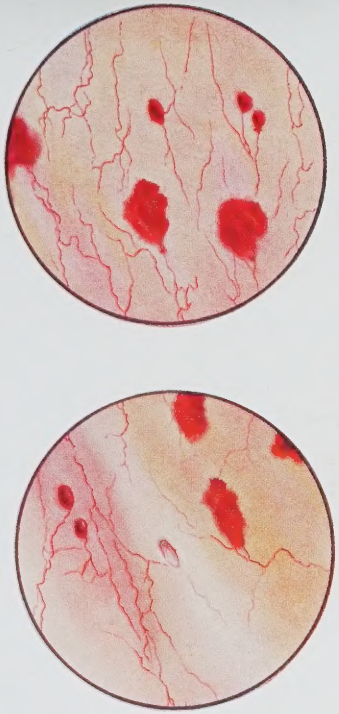

FIG. I.

FIG. II.

FIG. III.

Fig. I.—Cystoscopic appearance of purpura of the bladder showing petechiæ. The blood-vessels seen are veins, and the petechiæ are apparently formed by an exudation of blood-stained fluid or blood into the tissues around the capillaries just before they enter the finest veins. The edges of the petechiæ, though irregular in places, are sharply defined, and there is no inflammation around them. The larger patches sometimes appear very slightly raised, but the mucous membrane is usually intact. They vary from the size of a pin's head to areas ½ in. or more in diameter, and may be scattered over the bladder or confined to one small area. The rest of the mucous membrane is generally normal or at most shows very slight engorgement of the blood-vessels. Occasionally, however, there is mild diffuse submucous inflammation of the whole wall of the bladder, in the midst of which the petechiæ stand out plainly as blood red spots and patches.

Fig. II. (Case 4).—Kidney showing purpuric spots scattered throughout the pelvic mucous membrane, which appears pale and healthy between the petechiæ. Similar spots are evident between the collecting tubules in various places, but there is no generalised engorgement of the blood-vessels caused by inflammation.

Fig. III. (Case 5).—A large oozing submucous hæmorrhage is seen in the pelvis of the kidney.

covery was uneventful and the patient appeared to regain usual state of health.

There was no further trouble until October, 1925; then a week she had slight fever, and two attacks of slight maturia and increased frequency. She was given three es of antistreptococcal serum by the mouth. The eding at once stopped.

The teeth were X rayed and five or six dead stumps noted, removal was refused. The urine and fæces were mined by Dr. Alexander Fleming, who found a hæmolytic ptococcus in the stools and a strain of *B. coli* which the od agglutinated in high dilutions. Autogenous vaccines e started. *The first dose produced a severe attack of naturia.*

Oct. 19th, 1925. *Cystoscopy.*—The bladder was full of s, which had to be washed clear. Several large and many all purpuric patches could be seen on the base of bladder. e was abraded and bleeding. It was advised that she uld go on with vaccines but in smaller doses, take ium lactate from time to time, and have three doses of istreptococcal serum by the mouth if she were to bleed.

Jan. 28th, 1926. She has had the vaccine once a week ularly and the bleeding has stopped completely. Before vaccines were started coli agglutination of serum was 100; now it is 1/2500. No agglutination of streptococci. sonic index to streptococcus 1·34. Her general health greatly improved, she has no fever, and is able to get ut. If more than 0·5 c.cm. of vaccine is given she gets a ction in the bladder, accompanied by hæmaturia. She s again advised to have the teeth removed.

August 4th, 1926. She has been wonderfully well. Six d teeth have been extracted. There has been no norrhage since then, till this week. She is putting on ght and looks quite fit again. She has had 1/5th c.cm. vaccine regularly once a fortnight. Last week a drop of od on napkins. Cystoscopy revealed four or five tiny puric spots just at entrance to urethra on the trigone.

Feb. 24th, 1927. She has been the picture of health has had the vaccine regularly. During the last few s she has noticed a few drops of blood on her napkins slight pain in the urethra. The bladder appeared lthy except for a large purpuric patch on the trigone, at the entrance to the urethra. Three more doses of im given.

March 17th, 1928. She writes to say she considers that is completely cured, as she has had no more trouble and n good health.

Note.—This was the only case out of eight with purpuric neys where pain was felt. The remaining seven kidney puras had painless hæmaturia.

Purpura Simplex; Purpura of the Kidney.

CASE 4.—A married woman, aged 40, first examined in ember, 1923, had suffered for one week from profuse but nless hæmaturia. The urine contained blood, but no pus, was sterile. Cystoscopy showed that blood was pouring ascades out of the right ureter. The efflux from the left er was clear, and the left kidney was of good functional ue. A pyelogram of the right kidney showed a double vis, but no evidence of tumour. As the bleeding appeared be endangering life the right kidney was removed early January, 1924. Examination revealed no pathological nges, except the presence of a number of purpuric spots tered throughout the pelvic mucous membrane (Fig. II.). Recovery was uneventful. The tonsils, which were rged, were removed. Since then there has been no her trouble of any kind, and in 1928 the patient is known be in excellent health.

Purpura Fulminans; Purpura of the Kidney.

CASE 5.—A man, aged 59, was first examined on August 16th, 1. His doctor stated that in May, 1918, patient had suffered n pain in the abdomen and diarrhœa. In May, 1921, he a second attack accompanied by fever, and was in bed lays. On July 14th, 1921, he had pain in the pyloric end tomach and fever, and had to go to bed, where he had n ever since. On August 3rd, 1921, he had an attack etching and spat up blood, *which came from the teeth.* t day he started profuse hæmaturia, which persisted since, with no pain in bladder or kidneys, but with slight r all the time. The urine is said to contain *B. coli* on ure. It contains a large quantity of blood, a few helial and blood casts, but no pus. The temperature is er above 100° F. Calcium lactate, acid. sod. phosphate, later, alkalis and hamamelis, were given without eficial result.

n examination the patient looked weak and anæmic n loss of blood. The kidneys were not enlarged. Cysto- by showed the bladder wall not inflamed and blood ring out of right ureter. The urine from the left kidney clear and of good functional value. The gums were gy and blue, and blood was weeping slowly from the gins round the teeth. There was a large subcutaneous norrhage over the front of the right ankle. A provisional diagnosis of purpura was made, but as the pulse-rate varied between 70 and 90 per minute it was decided not to operate. The patient was flooded with alkalis and given hæmoplastin. The urine on cultivation yielded the *Streptococcus fæcalis* and a Gram-negative bacillus. Blood cultures were negative.

On the evening of August 17th the bleeding was more profuse and the patient was becoming blanched and restless, the pulse-rate having risen to 120 per minute. As it was obvious he was bleeding to death the right kidney was exposed. *The wall of the ureter was œdematous and glassy*, as is often seen from irritation by blood. The ureter and pelvis were distended with blood, but there were no clots. The right kidney was removed. On opening the kidney the cause of the hæmorrhage was apparent. The pelvis of the kidney was covered with purpuric spots, some the size of a pin's head, some of medium size, and there was one quite large submucous hæmorrhage in the middle of the pelvis. There were tiny white areas of fibrous tissue in the centre portions of the pyramids (see Fig. III.).

Dr. Elizabeth Lepper examined the kidney while fresh, mounted it, and furnished the following report:—

"The acute changes are almost limited to the mucous membrane covering the parietal wall of the pelvis; here the vessels are markedly dilated and full of polymorphonuclear leucocytes. There is a moderate round-cell infiltration of the submucous tissues and between the epithelial cells, and a very marked extravasation of red blood corpuscles, which accounts for the naked-eye appearances and presumably for the hæmaturia, though in consecutive sections I have not been able to demonstrate any actual loss of epithelium exposing a vessel. There is slight leucocytic infiltration at the tips of the pyramids. The changes in the cortex are chronic in character, some patches of fibrosis being present. There is, however, cloudy swelling of the epithelium of the tubules. No organisms have been found in any of the sections. Cultures made from the fresh specimen and from the urine grew the *Streptococcus fæcalis* and a bacillus of the proteus group."

Progress.—There was considerable shock for 24 hours, but next day the urine was clear of blood and the patient took a turn for the better. He was given hæmoplastin and alkalis.

August 21st, 1921. A bruise appeared on the left arm.

The wound healed on the ninth day, but continued to ooze a little blood-stained serum. Gastro-intestinal disturbances became more marked.

The patient went on fairly well until August 31st, 1921, and had no more hæmaturia. Then acute delirium, rigidity, and twitchings started suddenly. From this day on he got gradually worse. Though there was no return of any hæmorrhage, yet about the middle of September he gradually sank and died.

This case appears to represent a fulminating reaction to poisons absorbed from the teeth and alimentary canal.

SUMMARY OF THE TWENTY-FOUR CASES.

The condition affected females more often than males (19 to 5); the mild type usually attacked young children (6), and the more serious type those well advanced into middle age (18). Fourteen cases could be grouped as purpura simplex, 8 as purpura recurrens, and 2 as purpura fulminans. In 16 cases the purpura was confined to the bladder, in 3 cases it was present in both bladder and kidneys, in 5 cases it was confined to one of the kidneys.

Hæmaturia was present in all, was mild and transient in seven, was profuse and abundant, lasting for days at a time in ten cases, and was profuse, alarming, and dangerous to life in eight cases, so profuse that nephrectomy had to be carried out. In the two fulminating cases nephrectomy stopped the hæmaturia, but the patients died of exhaustion or of hæmorrhage elsewhere in the course of a few months. In the other six cases nephrectomy stopped the hæmaturia and the patients' lives were saved. Of these, three had no further trouble of any kind and are in good health, one had trouble for a time but is now cured, two still suffer at times from mild attacks of hæmaturia.

Pain was a marked feature in all the bladder cases, an intense strangury felt at the neck of the bladder, often so severe as to make the patient cry out, accompanied by distressing frequency of micturition. In all such cases petechiæ were seen in the bladder mucous membrane. Pain was not complained of in seven out of the eight cases diagnosed as renal. In this regard purpura of the kidney seems to differ from purpura of the bladder. In one renal case alone complaint was made of rather severe aching pain in the bleeding kidney, and in one other case the patient

noticed a sudden sharp stabbing pain in one kidney just as the hæmorrhage started, but it disappeared in a few moments and did not return.

Petechiæ and hæmorrhage occurred simultaneously in bladder and kidney in only three cases. In only two cases did it occur in the second kidney after the first had been removed for hæmorrhage. The bladder cases were far less severe than the kidney cases. In only one case was there evidence of a true nephritis, and in this case the condition was a large white kidney or "nephrosis."

The blood in the urine showed little tendency to clot, except in a child who had one attack of clot retention. Though there appears to be little if any delay in the clotting time in cases of purpura, yet there may be a diminution in the number of blood-platelets and a lack of firm retractile fibrin in the clotted blood, and the bleeding time is usually prolonged (Hayem, Duke, Frank). Exact observations of the blood were not made in a sufficient number of cases to make it possible to classify according to blood changes. No case of thrombocytopenia (Frank) was observed, but some may have been missed.

Fever was absent in 15 cases, and in the others was only very mild, the temperature seldom rising to more than 100° F., despite the grave condition of some of the patients. In this respect the cases differ markedly from ordinary cases of pyelitis and cystitis, and resemble and are sometimes mistaken for acute rheumatism if the joints are swollen. The cases described by Stevens and Peters appear to have been due to a peculiar type of poison related to the cause of trench nephritis.

Wasting was only noticeable in four cases and profound anæmia in eight. Many of the 15 ambulatory cases appeared remarkably well, despite the strangury and hæmaturia.

Eight patients were so desperately ill from loss of blood that nephrectomy was necessary. Only two other patients caused anxiety; in one recovery followed removal of an inflamed appendix and renal lavage quickly cured fever and pyelitis in the other.

The blood pressure was usually low, possibly due to loss of blood, a point which helps in the diagnosis from nephritis and congenital cystic kidney.

Two cases had intermittent painful swellings of the joints, seven had intermittent attacks of petechiæ or bruisings of the skin in various parts of the body, four had attacks of hæmorrhage from the bowel, and two had severe hæmorrhage from the gums. In these respects also they differed from the cases described by Stevens and Peters, wherein the lesions were confined to the bladder and kidneys.

Sources of Bacterial Infection.

As time went on it was recognised that the teeth and tonsils were most likely to be the cause of the trouble. In three children purpura of the bladder came on shortly after the enucleation of tonsils containing pure cultures of streptococci, but no pus could be detected in the urine. In another child the trouble came on the day after the extraction of a number of teeth infected with streptococci. In seven cases X ray examination of the teeth revealed septic stumps, the removal of which seemed to benefit the patients; in four streptococci were isolated in pure culture from the teeth and the urine. In eight cases the tonsils appeared diseased and were removed, and, in six of these, streptococci were isolated in pure culture from the tonsils and urine. There was usually a trace of albumin and an excess of epithelial cells in the centrifugalised urinary deposit. A few blood and epithelial casts might be present, but granular casts in large numbers were absent except in one case that had chronic nephritis. In nine cases the urine was sterile, and in the majority of cases no pus was detected in it. In this respect, again, the cases differ from ordinary cystitis and pyelitis. Bacilli of the colon group were isolated in eight cases, usually without pyuria. In nine cases it was possible to isolate cultures of a streptococcus from the urine in the absence of pus, in two associated with bacilli of the colon gro
It seems probable that by special methods streptoc
would be more often isolated from these cases th
has been possible in this series. Streptococci se
liable to die out in culture, or are apt to be overgro
by the bacilli of the colon group, unless spe
methods are adopted to encourage their grow
More and more the impression was gained that
peculiar type of streptococcus was the most lik
cause for the petechiæ, a streptococcus which mi
reside in the teeth, throat, or bowel, and which,
means of poison poured into the blood stream, mi
attack and injure the walls of the fine capillary blo
vessels so as to cause exudation of blood through the
In two cases the injection of an autogenous strep
coccal vaccine in too high a dose at once produced
attack of purpura and hæmaturia, and in one c
this happened on more than one occasion.

When pus was absent from the urine the blad
mucous membrane as a whole did not appear inflam
but was dotted over with petechiæ of varying sha
and sizes. Where pyuria was present all the blo
vessels of the bladder mucous membrane might app
very slightly injected, but the petechiæ stood
boldly and clearly even from the slightly redde
mucous membrane, so that the diagnosis from hæm
rhagic cystitis was usually quite distinctive.
all cases the blood appears to exude from
petechiæ through the intact mucosa as if continuou
squeezed out of a sponge. It is extraordinary h
much blood may thus flow away in the urine
transudation without ulceration or breach of surfac

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THE EXPERIMENTAL BASIS OF RADIUM THERAPY IN CANCER.

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Two years after the discovery of radium in 1898 was already being used for the treatment of perficial malignant growths and its employment as gradually extended to the treatment of nearly very variety of malignant disease. The rays from dium and other radio-active bodies are now niversally looked upon as definite therapeutic agents r cancer. Since 1910 there has been no need for ncertainty about the measurement of radium, for that year, international standards were adopted. t the present time, if careful and detailed descrip-ons of any particular radium technique are recorded, e same treatment, with identical dosage, can be llowed by others in any part of the world. The me dose can be given again and again in exactly e same form. When we remember the great fficulty of exact measurement of dosage when using ray bulbs of varying output, this great advantage radium is evident. Generally, the dose is expressed the quantity of radium used and the length of posure; it is essential to add a description of the plicators or tubes, and to state exactly their sition. Only when this is done can any comparison made of the doses received at different points in e tissues.

Selective Action of Radium on the Tissues.

The effect of radium is not the same on all tissues, d the full effect of a dose of its rays is often delayed several weeks. One of the first facts known from periments was that when a malignant growth was ven an effective dose of rays the cells gradually olved and were not killed at once. There is no vious sudden destruction of malignant cells, but her a series of changes which, after stopping ision and growth, ultimately causes the disappear-ce of the cells. Time is an essential factor in this ies of events.

If a mouse or rat tumour is given a lethal dose of mma rays and some of it is transplanted into other rat or mouse, as the case may be, tumour ls can be found alive and practically indistinguish-e from the normal tumour cells for about 6–7 days; this time some degenerate changes are recognisable. The rays have essentially a selective action. They ve much more destructive effect on lymphocytes some glandular structures, such as the cells of the roductive organs, than on many other normal cells structures of the body; apparently, some of the st sensitive are muscle, cartilage, and nerve cells. The question whether the rays have a greater tructive action on malignant tissues than on the mal tissues of the host can hardly be answered a plain yes or no. No doubt, in time, we shall e accurate data which will make it possible to ce the different normal tissues of the body and ignant tumours in the right order of vulnerability, when this is possible on a quantitative basis, question may be answered more certainly than an now. But such a list of tissues, in the order of r vulnerability, is an exceedingly difficult thing nake; this is not due so much to the difficulties of ervation and experiment as to the fact that the tions of different tissues seem to depend on and y with the time and intensity factors of the dose. fact, it may be said that, granted the reality of ctive action, advantage can only be taken of it n the best conditions of dosage have been dis-ered for each tissue. Experimentally, it is not cult to find a physical dose which will have a al action upon animal malignant cells, but this sical dose can be arrived at in a very large number ays by variations in time and quantity and yet remain a lethal dose. Which of these ways is best to adopt when a malignant growth has to reated in situ is not yet definitely known.

The Optimal Dosage.

If a tube made of platinum, 0·5 mm. in thickness and 25 mm. long, containing 25 mg. radium element is put into a rapidly growing tumour in a rat for 48 hours, it can be shown that cells a little further than a centimetre away from the middle of the tube have had a lethal dose; for they will not grow when reinoculated into susceptible rats. Now this result can be equally well obtained by using 50 mg. of element for one day, or 5 mg. for ten days, the physical dose being the same in all three cases. The question is, which is the best kind of dose to use therapeutically. The reply can only be got by trial. Careful clinical investigations pursued to this end have brought us very much nearer to the time when optimal doses can be prescribed. It is important to know what are the lowest useful intensities; if 2 mg. of radium element per centimetre length of platinum tube are as useful as 20 mg., provided the time of exposure is adjusted accordingly, how much further down the scale of quantity is it safe to go? Experiment shows unmistakably that one cannot use very small intensities of radium and hope to get a lethal effect on malignant cells, for it appears that, just as with drugs or with electrical, mechanical, or chemical irritants, tissues normal or malignant can withstand these very small intensities more or less indefinitely, if a certain definite intensity of action is not exceeded. The tissues of the body are not altogether strange to ionising radiation, for it is credibly estimated that the penetrating cosmic radiation creates about a million ions per second per individual struck. The limiting intensity for any deterrent action obviously sets a limit to the useful range of radium tubes. Beyond the lethal range of a tube there is a range within which there is definite evidence that growth is hindered, and beyond this, a region in which the cells, though irradiated, are able to cope with the irradiation, even though it is prolonged more or less indefinitely.

This important fact sets a definite limit to the range of effect of any radium applicator or tube. This range is rarely as much as an inch through tissues. In treating cases of cancer with radium, unless we can visualise the range of effect with some accuracy, tracts of growth are apt to be left untreated; this is a vital point, and it emphasises the necessity of carefully planning the radiation, so that the whole of the involved region receives an effective dose. The radium should be distributed in as many foci as practicable, rather than concentrated in one spot; for too intense local irradiation, with the outlying parts not adequately treated, tends to cause unnecessary local damage.

Stimulation of Growth and Acquired Immunity.

The question is often raised whether weak irradiations can stimulate tumour growth. A good deal of experimental work has been done on this subject, and there has been some conflict of opinion upon it; this is probably due to the fact that, if cells do grow more quickly under weak doses of gamma rays, they certainly do not grow much more quickly, and there may well be differences of opinion over small differences in rates of growth. And yet it is, I believe, an experience sometimes met by clinicians that, after radium has been put into a septic malignant growth, the growth continues at an apparently greater rate; it seems safer to attribute this rather to the sepsis and necrosis than to a direct action of weak doses upon the proliferating power of the cell. There is, of course, the disquieting possibility that quiescent cells may be brought into activity by weak doses of gamma rays, but at present we have no definite experimental evidence on the point.

Some very early experimental studies showed that some varieties of cells appeared to be more affected by a dose of rays if they were actually undergoing division at the time than if they were in the resting stage. Normally, of course, only a small percentage of the cells in a tumour is in a state of division at any particular moment, but there is a distinct chance

that by increasing the time of exposure a bigger number of dividing cells can be irradiated. Exposures lasting a week or more are now often used, and in some cases it is maintained that better results are got in this way, but it would be risky to conclude that this was due to the irradiation of a bigger percentage of dividing cells, for it may just as likely be due to the fact that growing cells are more affected by long-continued weak intensities than by short, strong ones.

It has been proved, clinically and experimentally, that malignant growths given repeated, sub-lethal doses of gamma rays often develop an increased resistance to the action of the rays. In fact, tumour cells, after repeated irradiation, have been found to withstand as much as 2½ times the normal lethal dose. This means that any form of radiation treatment should be planned so that the whole dose of radiation is given within a reasonable time and not repeated indefinitely. The fact that normal tissues are profoundly affected by gamma rays brings with it the practical certainty that the effect which a dose of these rays has on a malignant growth in the body is to some extent dependent on what the rays do to the normal structures around. In fact, we have experimental evidence that malignant cells do not grow so readily into regions of the body which have been irradiated. Naturally this effect is dependent upon the dose given, and much more work is needed before definite data can be given.

Malignant growths adequately irradiated may disappear locally, but there is very little evidence that in so doing the tumour cells which are absorbed have any deterrent action upon metastases. And yet there is the experimental fact that, when mice or rats which are ordinarily susceptible to tumour implantations have been inoculated with tumour which has had a lethal dose of radiation, a subsequent implantation of the normal tumour does not grow, and such inoculations can be made repeatedly on the same animal with a negative result. A closer parallel to the human case is, however, provided by spontaneous tumours in these animals, and up to the present it has not been shown possible to influence the formation of metastases in mice or rats by the irradiation of their primary spontaneous tumours. Very little work has been done on these lines owing to the difficulty of obtaining satisfactory conditions. Some evidence, however, exists to show that under certain conditions substances may be extracted from an irradiated tumour which actually stimulate tumour growth, and in this rather disturbing possibility some of the bad results of radium therapy may find an explanation.

Mode of Action.

As radium is used so much in the treatment of cancer, it is natural to want to know if an answer can be given to the question, How does it act? The outstanding fact of selective action does not in itself give any immediate clue to the answer to this question, just as the specific action of a drug on some particular organ of the body may still leave us ignorant of the way in which it acts. The most striking physical effect of gamma rays is that, when they pass through any medium, whether it be air or water, or the tissues of the body, they liberate negative electricity throughout the medium—i.e., they ionise it.

In certain cases it is very easy to measure this liberation of electricity and, in fact, the measurement of ionisation currents in air is the basis for all the standard physical measurements of gamma ray activity. In the tissues of the body it would be difficult to make such measurements with any accuracy because, normally, the electrolytes present give far bigger currents than those which would be produced by therapeutic doses of gamma rays. Yet this action is in all probability the one which, when intensity is great enough, at any rate starts processes which lead eventually to the damage of cells. One of the first steps in any attempt to explain how the rays cause these reactions in the tissues seems to consist in finding out how much local differences in ionisatio can upset cell equilibrium.

In this connexion there appear to be two ver significant facts; one is that under normal conditio the pH of the tissues is a very constant quantity, th other is that the ionisation produced by gamm rays in going through a medium is not a perfectl uniform process, for at any instant some regio are being ionised and others not. It has bee estimated that when a beam of gamma rays goe through the air it only ionises about one molecu in a million of those through which it passes, an probably the same sort of thing occurs in the tissue A locally intense ionisation is a process to which th tissues are ordinarily quite unaccustomed, an consequently they may find considerable difficult in accommodating themselves to it.

VARICOSE ULCERS:

A COMPARISON OF TREATMENT BY ULTRA-VIOLE LIGHT AND UNNA'S PASTE DRESSINGS.*

BY DORA C. COLEBROOK, M.D. LOND.

THE object of this inquiry was to observe the effe of irradiation by mercury-vapour arcs on the co dition and course of healing of varicose ulcers. Th subject appears to be a suitable one because (*a*) progre in the condition is measurable by simple means (*b*) it is commonly reported that irradiation in th condition is associated with certain definite effect (1) a direct or indirect bactericidal effect; (2) a effect on the vessels of the ulcer or on the circulatio of the whole leg; and (3) a stimulating effect o epithelial growth. It is claimed that the chang resulting from the action of the light in these thr respects on the character of the ulcer and its di charges are readily appreciated by the naked eye.

The number of ulcers was 84 (68 patients); 37 we treated with light and 47 with Unna's paste. Eleve ulcers are omitted from the tables (6 light and 5 Unn cases, all of which healed rapidly) because they we so small or so recently under treatment that the gave no clear evidence of the extent to which th special treatment had contributed to the resul Three Unna cases (5A2, 25A1, 61A), all of which di badly, are also omitted from Table A because, owin to various difficulties, they were dressed witho regard for the three principles suggested in this pap as essential. Of these three cases, two (5A, 25A) hav recently made striking progress with a new trial the paste dressing; one (61A) has not reappeared.

The Wassermann test was made in every ca where the appearance was at all suggestive of syphilitic infection. One case only (58A) giving positive reaction was included in the series becau it had already withstood antisyphilitic treatmen and appeared to contain a varicose element. Apa from this case, all the ulcers gave the history an showed the appearance and distribution associate with varicose ulcers.

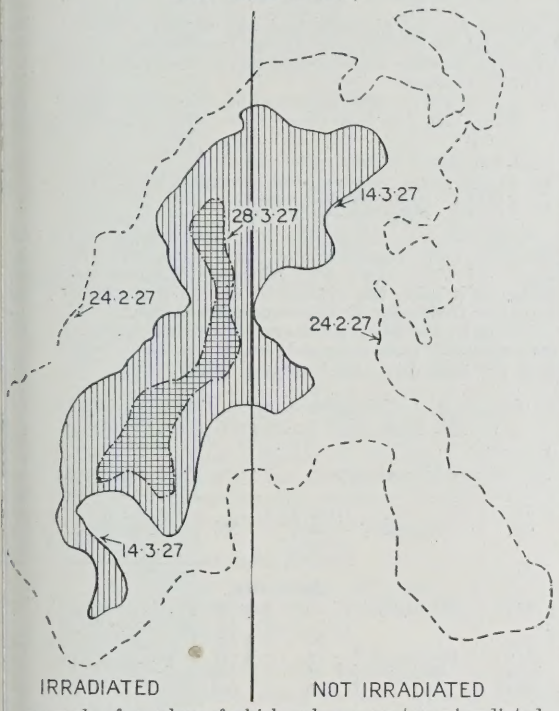
Evidence of Progress.

The attempt was made throughout to depend o objective rather than subjective evidence, an although notes were made of the observed state the healing edge, of the base of the ulcer, and of th discharge, as well as of any striking alteration the patient's symptoms, chief reliance was alwa placed on the actual surface measurement of th ulcer, and on the subsequent behaviour of the sca Further, in the light cases no support other than th which the patient was in the habit of wearing, an in the Unna cases no antiseptic or application oth than a simple zinc preparation was used. Whe

* This paper forms part of a report to the Medical Resear Council. A table giving full details of the cases and th treatment will be supplied by the author to anyone who interested. The case-numbers (in brackets) in the text ref to this table. (Table C.)

r any reason, an exception to this rule was made, note to that effect is found in the tables. At tervals of 14 to 21 days the edge of the ulcer was aced on transparent cellophane tissue with a fine ush and the line subsequently pricked out on to

FIG. 1 (Case 15 A).



n example of an ulcer of which only one part was irradiated.

per for a permanent record. The series of superposed tracings in different coloured inks gave a ry clear picture of progress so far as size was ncerned. (See Figs. 1 and 2.)

Methods Used.

A. *Light Cases.*—The burners used were: (1) Two e-cooled Hanovias of vacuum type for A.C.;) one air-cooled K.B.B. of atmospheric type for C.; (3) one water-cooled Hanovia (Kromayer) for C.; (4) one water-cooled K.B.B. for D.C.

Dosage.—Irradiation was in every case local, but the whole the leg up to the knee was exposed except in those cases which a very strong dose was given. It is not suggested at a general systemic effect could be excluded. For the ke of brevity, and because figures relating to time of posure and distance of patient from lamp are only useful ere there is a standard output from the lamp, the doses th the air-cooled lamps are given in terms of a roughly imated erythema, produced on similar areas of the skin an individual of about average sensibility. It was found this test that the air-cooled burners gave an erythema ting for at least two to three days, at a distance of eet, in four to seven minutes according to the age of the rner, while the water-cooled lamps applied to the skin ve a marked reaction with multiple small blisters in to 50 seconds. Since neither the ulcerated surface nor the ghly pigmented region surrounding the ulcer showed any ythema, the term is merely used as a comparative one, t where an actual definite reaction was seen on the althy skin beyond the pigmented area, the fact is indicated Table C. The doses given with the water-cooled lamps e expressed in minutes. The mild doses were given with e air-cooled lamps at 2 feet, the stronger doses with the -cooled lamps at 1 foot or with the water-cooled lamps in ntact. Where a strong dose was given to the ulcer the in immediately surrounding it was protected.

Treatment was usually given twice or thrice weekly, but ere a strong dose was given a longer interval was some- nes left.

All the bed patients, many of the ambulant patients, d all those exposed to the water-cooled lamp were treated the writer personally; a certain number of the ambulant ses were treated by the nurse-in-charge under direction. It was the rule for all except the more chronic cases to be seen by the writer at least once a week.

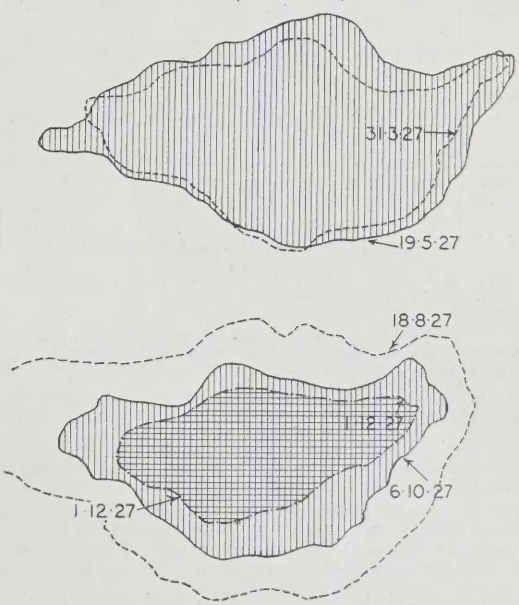
Dressings.—Normal saline and liquid paraffin were used as dressings on account of their ability to transmit the shorter rays. A spectroscopic test of the paraffin showed that wave-lengths down to 2400 A.U. passed through a layer 1 mm. or less thick with practically no absorption. For bed cases no other dressings were used, but when ambulant patients were intolerant of them, they were replaced by simple ointments which were wiped off before treatment. Although it was obviously impossible to cleanse the surface completely without damaging the granulations, no retardation was noted with the change over to this type of dressing.

B. *Unna Cases.*—The composition of the paste used was: zinc oxide 6, gelatin 4, glycerine 12, and water 16 parts by weight. Two and a half inch bandages of thin white muslin without "dressing" were used. They were soaked in water and wrung out as dry as possible before application. The paste was melted on a water-bath and used as hot as could be tolerated quite comfortably.

Three conditions were thought to be essential: (*a*) that the half foot, the heel, and the whole leg as far as the knee should be evenly covered; (*b*) that the bandage should be pasted on without pressure in any direction; and (*c*) that during change of dressings the leg should be kept in the horizontal position.

The actual method of bandaging varied according to the case; where the leg was slim, the foot and ankle and the lower quarter of the leg were completed in the first stage, the rest in the second. Where the leg was very shapely or showed prominent veins, strips were applied, each starting round the foot or ankle and sweeping up in a one- or two-turn spiral to the knee; thus successive areas were covered and an upward pull exerted. Each layer of bandage was

FIG. 2 (Case 26 A).



The upper diagram shows the change in outline of a varicose ulcer (Case 26A) between March 31st and May 5th under treatment by ultra-violet light. The lower shows the improvement after readmission on August 18th when treatment with Unna's paste was begun.

covered with a layer of paste. In the great majority of cases the bandage and paste were applied direct to the ulcer; in a few cases the ulcer was first covered with a simple zinc ointment and some layers of gauze. In many cases a rubber sponge [1] was inserted between the first layers of the bandage. The sponges were 1¼ inches thick and cut to a size a little larger than the ulcer.

The dressings were usually changed twice weekly for at least the first two or three times; if pain was relieved and the aspect of the ulcer was reassuring, the interval was gradually prolonged to 7, 14, or 21 days. Except in the first case of the series (2A), windows for dressings were not left. Experience of three cases (26A, 27A, 65A), in which the

[1] See G. Nobl: Wien. Med. Woch., 1925, lxxv., 1981.

skin surrounding the ulcer became sodden and showed denuded areas, led to the exercise of great caution when any redness occurred under the bandage.[2] On the other hand, it was frequently found that even where the ulcer was large the dressing could safely be left on for seven days, and, although it was very foul when taken off, the aspect of the ulcer was most satisfactory.

Cases.	*Duration of Treatment (in weeks).*			*Size of Ulcers Treated.*			
				Maximum.		Minimum.	
	Max.	Min.	Aver.	Area.	Pm.	Area.	Pm.
				sq. cm.	cm.	sq. cm.	cm.
Light ..	39	4	13·8	61·3	37	1	3
Unna ..	15	2	7·3	107	43·5	1	3

Pm. = perimeter.

Groups of Cases Treated, with Results.

The cases may be divided into five groups according to the treatment employed. In *Group A* the ulcers were treated with ultra-violet light, in *Group B* with Unna's paste. *Group C* consists of cases which failed to respond to light and were dressed with Unna's paste. The patients in *Group D* had two or more ulcers and in each case one of these was irradiated. Lastly *Group E* comprises ten cases in which the ulcers were so large that a part of them could be irradiated while the rest was otherwise treated.

Group A.—31 ulcers (15 bed, 16 ambulant cases) were treated with ultra-violet light. Further reference to 14 of these is made in Group C. (For results, see Table A.)

TABLE A.—*Summary of Results.*

Cases.	Healed.		Improved but not healed.		Unchanged.		Worse.		Total.	
	Light.	Unna.	Light.	Unna.	Light.	Unna.	Light.	Unna.	Light.	Unna.
Ambulant.	0	23 (76·6)	5 (31·2)	6 (20)	6 (37·5)	0	5 (31·2)	1 (3·3)	16	30
Bed ..	2 (13·3)	4 (44·4)	10 (66·6)	4 (44·4)	2 (13·3)	0	1 (6·6)	1 (11·1)	15	9
Total..	2 (6·4)	27 (69·2)	15* (48·4)	10† (25·6)	8 (25·8)	0	6 (19·3)	2 (5·1)	31	39

Figures in parentheses are percentages.
* 8 made no progress during last weeks of treatment.
4 made so little progress that other treatment was subsequently used.
3 discharged themselves when the ulcer was not quite healed.
† 10 are all making good progress, treatment continuing.

(1) Bed cases: 2 (18B Pt, 12B Pt) healed. In both cases a non-irradiated portion of the ulcer healed at the same rate. (2) Ambulant cases: None healed.

Group B.—39 ulcers (9 bed, 30 ambulant cases) were treated with Unna's paste. Further reference to 14 of these is made in Group C. Of the remainder, 7 had previously attended the hospital for varying periods but had made no progress. (For results, see Table A.)

(1) Bed cases: 4 healed. (2) Ambulant cases: 23 (including the 7 mentioned above) healed.

In the attempt to judge the part played by the light in this condition, in which spontaneous variations occur and on which many influences are at work, comparison was made, not only with the cases treated with Unna's paste as a whole (see Groups A and B), but also with cases treated first with light and later with Unna's paste (see Group C), and with certain untreated ulcers or parts of ulcers in the same patients as the treated areas and dressed with the same dressings (see Groups D and E).

Group C.—14 ulcers which had failed to respond to light were dressed with Unna's paste. (See Table B.) Of the 9 ambulant cases 6 healed, and the remaining 3, which are still under treatment, have shown marked improvement.

[2] The use of "blue paint" (crystal violet and brilliant green, ½ per cent. of each in rectified spirit and water) to the surrounding areas, as suggested by Dr. H. Haldin-Davis, is now being tried.

Group D.—4 patients had more than one ulcer. All h the same dressings; one ulcer in each case was irradiat
(1) Bed case: (12A and 12C). Same rate of healing in bo
(2) Ambulant cases:
1 (33 A and B). No improvement in either.
1 (62 A and B). No change in irradiated; deterioration non-irradiated ulcer.
1 (54 A, B, and C). Deterioration in all three areas.

Group E.—10 patients had ulcers (11) sufficiently la for a part to be screened during irradiation; in 4 of th a small area only was exposed to the water-cooled lamp.
(1) Bed cases:
2 (18A, 52A). More rapid healing in screened parts.
5 (8A, 12B, 15A, 18B, 32A). Same rate of healing in b parts.
(2) Ambulant cases:
2 (10A, 25A). Same rate of healing in both.
1 (19A). No progress in either.
1 (34A). Deterioration in both.

Inferences to be Drawn from the Above Groups.—(1) Amb lant cases: The superiority of Unna's method is very clea seen. (2) Bed cases: The difference is much less mark So far as it goes, the evidence suggests that the rest rat than the treatment is the important factor.

Owing to the small numbers no conclusions can be dra with certainty from Groups D and E, but there is no evide that the light has any beneficial effect.

TABLE B.—*Comparison of 14 Cases Treated First with Light and Later with Unna's Paste.*

LIGHT TREATMENT.			UNNA'S PASTE TREATMENT		
No.	Progress.	Duration (weeks).	No.	Progress.	Dur tio (wee
Bed Cases.					
1 (26A)	Did badly.	6	1 (26A)*	Improved greatly.	6
4 (27A)	Improved slowly.	39	1 (27A)	N.U.†	3
(31A)		13	3 (31A)	Improved slowly.	13
(32A)		8	(32A)		8
(52A)		6	(52A)‡		6
Ambulant Cases.					
4 (2A)	Did badly.	6	1 (2A) *	Healed.	5
(25A)		7	3 (25A)*	Improved considerably.	7
(34A)		13	(34A)*		13
(54A)		4	(54A)†		4
5 (14A)	Made no progress.	17	5 (14A)	Healed.	8
(22A)		8	(22A)		2
(23A)		15	(23A)		11
(33A)		8	(33A)		8
(62A)		6	(62A)		6

* Treatment continuing.
† Developed new ulcer, treatment abandoned.
‡ Has since healed as an ambulant case.

Effects of Varying Doses of Light.

1. Suberythema doses were given in the early stages treatment to 30 ulcers, and in 10 nothing further was tr over a period of several months. These cases on the wh ran a more favourable course than those having stron doses. The significance of this observation is discus later.

2. Erythema doses with the air-cooled lamps were gi to 20 ulcers; of these 8 showed a good reaction on whole leg. In many cases the ulcer only was expos While there was temporary improvement in a few cases, others no effect or a deterioration was seen.

3. Erythema doses with the water-cooled lamps w given, to the ulcer only, in 6 cases. In these cases, exposu of 4, 5, or 7 minutes were reached before the method abandoned. In none of these, apart from a dryness of surface immediately after exposure, was there any appar change in the condition of the ulcer. Four (8A, 10A, 1 34A) showed no alteration in size; two (23A, 25A) mad little progress, but both ulcers had previously improved about the same rate when under suberythema doses w the air-cooled lamps. Four (8A, 10A, 25A, 34A) had lamp applied to one part only; these parts showed distinctive changes.

Number of Doses Given.

—	Max.	Min.	Aver
Suberythema	40	4	15·5
Erythema (air-cooled lamp) ..	30	2	10·0
Erythema (water-cooled lamp)	23	5	11·5

Five patients only had less than 12 doses, three because he ulcer had not improved or was worse, two because the lcer was nearly healed and the patients wished for their ischarge.

Conclusions as to Dosage.

1. Progress was chiefly associated with the periods of ild irradiation. For this reason a very extended ial was given to this method. It must be borne mind, however, that the circumstances in which e mild doses were used—that is, in the early stages f treatment—were exactly those in which other eneficial influences are especially operative—viz., the bed cases the influence of the rest itself—an fluence most apparent in the earlier weeks of cumbency, and in all cases the influence of a change f treatment, of extra cleanliness, and of careful ressings. Moreover, since in this group the average eriod of irradiation was longer, the chances of ontaneous recovery were greater. The suggestion at the rôle played by the light itself was an important one is supported by the following bservations: (*a*) where comparison was made in is series, the behaviour of irradiated and non-radiated areas or ulcers was similar; (*b*) in many ses progress was not maintained, relapses occurred, d a continuation or a further course of similar eatment to the relapsed area was ineffective. Where a case was making little or no progress onger doses did not appear to accelerate healing. Where fluctuations in condition were noted they d not appear to be related to dosage. 4. Periods of st from treatment gave no indication of value.

Harmful Effects.

Although a certain percentage of cases did badly, ere was nothing in their behaviour to suggest that e irradiation actually did harm.

Progress of Unna Cases.

Whereas, in the light cases it was difficult to see y relation between the routine and the result, perience with Unna's paste strongly suggests that ilure may be associated with faulty technique. eference to this point has already been made in nnexion with excluded cases. No attempt has been ade to determine to what extent the rubber sponges ve contributed to the results; it is certain, however, at in a number of cases a most definite advance healing and in comfort followed their use.

Behaviour of the Scar.

The two (bed cases) patients treated by light, parts whose ulcers healed, have not been traced. It was not anticipated that the scar resulting from e use of Unna's dressing would provide any ception to the usual history of relapse; patients re, therefore, urged to attend for monthly applica-ns after healing had taken place. Most of the na cases were treated in the late summer of 1927, that they have been under observation since aling took place for three to four months only. 15 patients who have reported recently, 12 have en wearing the paste for at least three months; ne has relapsed, and all are absolutely comfortable. the three who left off the dressing, two had relapsed thin four months.

Other Evidence of Progress.

Although chief reliance was placed on objective dence of progress—namely, on measurement—it is ly recognised that a statement of size alone gives a y incomplete picture of the condition of an ulcer. ile no alteration in size may be demonstrable over ertain period, the most striking and incontrovertible anges may be apparent in its depth, the steepness its edges, and the character of the granulations. hen these changes are favourable, it is reasonable assume that they will be followed eventually by satisfactory rate of healing. Generally speaking, n where there was a decrease in size, irradiation s not associated with a healthy aspect of the ges and base. In the Unna cases, on the other hand, particularly when a rubber sponge was used, it was usual for the surface of the ulcer very quickly to undergo a striking change, to show flat edges and fresh red granulations. When allowance is made for the spontaneous variations in the condition of the ulcer which occur from time to time, it cannot be said that any appreciable relief of subjective symptoms was obtained from light treatment. The Unna dressing was associated with rapid disappearance of general discomfort and the feeling of heaviness and "inflammation" in the leg; the pain in the ulcer was in many, but not in all cases, as easily relieved. The occurrence or recurrence of pain was found to be a useful indication that all was not well; very notable comfort after the first week or two usually coincided with actual healing.

General Conclusions.

1. *Rate of healing.*—The effect of the light was markedly inferior to that of the Unna's paste, the most striking difference showing in the ambulant patients, many of whose ulcers had previously healed only with rest in bed. (For figures, see Table B.)

2. Favourable *changes in general character*, which were slight or absent in the irradiated ulcers, occurred at an early stage in those dressed with Unna's paste.

3. *Relief of symptoms* was not obtained during light treatment, but was a marked feature of the Unna cases.

4. The use of rubber sponge compression on the ulcer appeared to be definitely advantageous.

It is not claimed for this inquiry that it was an exhaustive examination of all possible methods of irradiating varicose ulcers. It was, however, hoped that a sufficiently extended trial, in carefully selected cases, of dosage ranging from very mild to very strong might serve to give some definite indication of effect and of practical utility.

The incidence of the disease falls on workers, and especially on men and women whose occupation involves much standing; the method of choice, therefore, must be that which involves the minimum attendance for treatment. It was the urgency of this aspect of the question which first led to a consideration of the claims made for the method of Unna as an alternative, and not merely as an adjuvant to any other, and hence as a control to treatment by ultra-violet light.

I acknowledge with much gratitude the facilities given me for this study—with the kind consent of the Boards concerned—by Dr. Haldin-Davis and Dr. C. B. Heald, of the Royal Free Hospital; by Dr. Remington Hobbs, of St. Mary Abbot's Hospital; and by Dr. Arthur Reade, of New End Hospital; as well as the coöperation of sisters and nurses in these institutions, and particularly of Nurse Cresswell, of the Royal Free Hospital, who has so ably and enthusiastically assisted me in the work. I am much indebted to Dr. Edgar Schuster and to Miss E. M. Newbold, M.Sc., for help with tracings and figures respectively, and to Dr. R. B. Bourdillon for criticisms and suggestions.

MANCHESTER AND DISTRICT RADIUM INSTITUTE.—The annual report for 1927 states that this institute was the first fully equipped hospital in the United Kingdom for treatment by radio-active substances. There are 14 beds for in-patients, two of them being set aside for paying patients. The existing stock of radium is quite insufficient, and the period of waiting for treatment sometimes removes all prospects of relief. The in-patients treated during the year numbered 566, and the total attendance of out-patients was 6976.

A HOSPITAL AT £600 PER BED.—The Park Poor-law Hospital at Davyhulme, which is being built by the Barton-upon-Irwell Board of Guardians, is approaching completion. It will cost over £300,000, and its 500 beds will thus have been provided at the rate of about £600 each, which the guardians believe to be the lowest rate of any hospital in England. The buildings include all the necessary departments.

A NOTE ON THE USE OF BENZYL CINNAMIC ESTER IN TUBERCULOSIS.

THE METHOD OF JACOBSON.

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In his thesis in 1919, Jacobson [1] established an analogy between tuberculosis and the diseases due to pathogenic fungi. In order to attack this infection he considered the possibility of using balsam of Peru, on account of its antiparasitic properties. Benzyl cinnamic ester is one of the constituents of cinnamein, the active principle of balsam of Peru. We know as a result of Jacobson's researches on the biological properties of the two radicles, the cinnamic and the benzyl, which together constitute benzyl cinnamic ester, that the cinnamic radicle hinders the growth in culture of the bacillus of Koch, diminishes the febrile reaction which occurs in a guinea-pig after the injection of tuberculin, and also produces an appreciable leucocytosis after its administration subcutaneously. The cinnamic radicle, in the form of sodium cinnamate (hétol) or of cinnamic acid which were studied by Landerer, has not these properties except that when injected intravenously a leucocytosis is produced. The benzyl radicle, studied by Jacobson [2 3 4] in the form of benzyl alcohol, has a powerful dissolving action on the tubercle bacilli in vitro. These bacilli, mixed with benzyl alcohol, and injected into guinea-pigs do not produce visceral tuberculosis or even cold abscesses; lethal doses of crude tuberculin mixed with this alcohol and injected into guinea-pigs do not cause death.

French Experience.

Clinically, benzyl cinnamic ester has given some encouraging results in the treatment of pulmonary tuberculosis; but in order to observe more closely the effect of this compound on the lesions of tuberculosis Jacobson first of all treated forms of tuberculosis which were external and visible and consequently more easily observed, particularly lupus.

The results which Jacobson [5] obtained in the treatment of tuberculosis of the skin at the Hospital St. Louis have been confirmed by Darier,[11] Jeanselme,[12] Mitchitch,[14] Froissard,[17] and by different observers at the three Congresses of Dermatology—Paris 1922, Strasbourg 1923, Brussels 1926, and particularly by Vigne and Fournier.[20] Benzyl cinnamic ester has been shown to be equally useful in the treatment of tuberculous glands. Jacobson's results [9] in this respect have been confirmed by Sebileau [16] and by Desplas.[19] Especially suggestive results have been obtained in the treatment of genito-urinary tuberculosis by Cathelin and Brulé,[15] and by Tissot and Chaignon.[18] The preparation is no less efficacious in the treatment of tuberculosis of the mucous membranes. Jacobson [6] has reported his results in buccal tuberculosis confirmed by Jeanselme; Dufourmentel and Sebileau [16] and Caboche [21] for laryngeal tuberculosis.

As a result of the use of benzyl cinnamic ester these reports have demonstrated improvements in the actual tuberculous lesions, but apart from these the improvement of the patients has been definite, and in some cases very considerable. These results were so encouraging that Jacobson then tried the treatment of pulmonary tuberculosis, and in a recent communication [10] has reported the results on ten cases. The importance of this communication is not only in the improvement of the symptoms but the evidence afforded of rapid modifications in the diseased lungs shown by X ray examination and which makes this report particularly interesting.

After having learnt of Jacobson's researches I have myself endeavoured to observe the effects of the product in tuberculosis and have studied the action of Jacobson's solution at first on cases of extern tuberculosis which were more easily observed.

The results which I have obtained in a short tim appear to be sufficiently suggestive to be wort reporting.

Technique.

The treatment consists of a course of 12 dail intramuscular injections, followed by a rest of 1 to 18 days, after which the course is repeated twic in this manner so that three such series of injectio are given. The patient is then given one to tw months rest before restarting treatment in the sam manner.

The dose varies from 0·25 to 1·0 c.cm. of th solution, the former dose for pulmonary or bucc laryngeal cases, the latter dose for cases of extern tuberculosis uncomplicated by either former cond tions. There is no reaction, general, local, or foc after administration of this product.

Three Typical Cases.

The following three cases are typical of the resul obtained in all the cases so far treated.

Case 1.—D. K., male, aged 23. Tuberculous glands neck. General condition poor. Nov. 27th, 1927: In le anterior triangle of neck there is a mass firmly adherent skin and deeper structures discharging freely from a sin at the lower pole. Above it is a healed sinus. On the rig is a large freely movable mass of glands in the anteri triangle. This mass has only been noticed two or thr weeks; the other mass has been present for four month having been incised previously and then closed. Th wound broke down shortly afterwards. There is an evenin temperature reaching 99·5° F.

Treatment with benzyl cinnamic ester commence After the first series of injections the mass on the left si had disappeared, and the sinus discharge was very muc less. The mass on the right side had become larger ar fluctuant—the pyrexia had increased and there was son mental disturbance. He then left my care for a time b returned Jan. 4th, 1928. Treatment was restarted. Ear during the second course the right side started dischargi pus, and the swelling subsided. The patient's gener condition started to improve, he became afebrile, th discharge ceased on the left side, and shortly afterwar ceased on the right side. By the end of the third series injections, Feb. 16th, he had gained 8 lb. in weight, th left side appeared firmly healed, and the right side ha been dry for some days. There was no swelling on eith side of the neck, and he was quite afebrile. His appeti had improved enormously, his mental condition was norma and in general he felt much better.

Result: Very marked general and local improvement.

Case 2.—E. D., male, aged 29. Tuberculosis of kidne with cystitis. General condition poor. Patient pale ar anæmic; he had been suffering for over two years, bot kidneys were affected, tubercle bacilli had been found the urine, there were occasional attacks of hæmaturia. H had been treated with tuberculin B.E. On the whole h seemed definitely to be losing ground.

Dec. 5th, 1927: Frequency now $\frac{D\ \frac{3}{4}\text{ hourly}}{N\ 1\frac{1}{2}\text{ to }2\text{ hourly}}$. P complains of severe pain over the bladder, particular in the morning.

Treatment with benzyl cinnamic ester commence After the first series of injections the pain became definite easier; he gained 2 lb. in weight, and his general conditio improved as regards appetite and strength. The frequenc remained unchanged. During the second course of injectio he gained a further 2 lb. in weight, the pain practical disappeared, but an attack of hæmaturia occurred whic caused rather a set-back. After the third course, he regaine the weight he had lost, pain was completely absent, h general condition improved still further, and the frequenc was now $\frac{D\ 1\text{ to }1\frac{1}{4}\text{ hourly}}{N\ 2\frac{1}{2}\text{ to }3\frac{1}{2}\text{ hourly}}$. Patient feels quite certain his improvement. Total gain in weight 4 lb.

Result: Improvement.

Case 3.—S. W., male, aged 40. Tuberculosis of lun and larynx. Patient well nourished, but feels very wea and tired. History of cough for five months. Tuberc bacilli had been found in the sputum. He had been gettin increasingly hoarse for six weeks, this symptom havin appeared while he was in a sanatorium. He is dyspnœi There is considerable discomfort on swallowing and som pricking pains in the throat. Physical signs: Dullness the upper right lobe with almost tubular breathing at th apex. Hard crepitation at both apices. X rays sho extensive long-standing tuberculosis of the right upper lob

ad the left apex is not quite clear. Laryngoscopy shows anulation tissue on both cords, with a large mass of anulation tissue in the interarytenoid space and œdema the ventricular band.

Dec. 30th, 1927: Treatment with benzyl cinnamic ester mmenced. Patient is practically aphonic, and his mperature reached 99·5° most evenings. By the sixth y of treatment marked improvement was noticeable in s voice. Patient felt very much better than he had for me time. By the end of the course the improvement in s voice was very marked, though there was still some arseness. There was no longer any pain in the throat, r was there dyspnœa. The laryngeal appearance was rdly changed. By the end of the second course of injecns the voice had become stronger, the discomfort on allowing had completely disappeared, and laryngoscopy so revealed improvement. The interarytenoid swelling d almost entirely disappeared, the œdema diminished nsiderably, and the deposit on the cords was smaller. e patient increased 2 lb. in weight, and his general ndition was improved. He felt stronger and his appetite s now quite good. Physical signs in chest unchanged. Result: Improvement.

Apart from these, three other cases of glands in e neck were treated, two of these cases having scharging sinuses. All cases showed improvement, e sinus healing rapidly. Two cases of renal berculosis with cystitis and two cases of tuberculous ididymitis showed definite improvement in the neral condition and relief of pain and diminution toxæmia. Two cases of chronic pulmonary berculosis showed marked improvement in the neral condition after a short period of treatment ly. One case of tuberculous iritis and iridocyclitis eived so much benefit that lens extraction came possible and was successfully performed. e case of lupus vulgaris showed rapid improvement ring the first course of injections. One case of tuberous perianal abscess showed marked improvement.

Remarks.

These are all the cases treated, and they are still der observation. In reporting these cases, none which have been treated for more than three nths, I realise that it is impossible to say anything to the further prognosis of these patients, but rertheless, in that short interval of time during ich they have been under observation, improvent of some degree has been observed in *all* the es. This result seems to me very suggestive as the favourable influence of this treatment. The provement has been particularly striking in some es where the general condition was either poor definitely getting worse before this treatment was ted. In conclusion I can certainly confirm that use of Jacobson's solution of benzyl cinnamic r has given rise to no noticeable reaction, either eral or local, and that it has in all cases been fectly tolerated.

I have to thank my colleagues for allowing me to t and report on their cases and for their help in ny ways.

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Clinical and Laboratory Notes.

A NOTE ON BACTERIOPHAGE FROM CASES OF RICKETS.

By T. Redman, M.Sc. Lond., M.B. Liverp.,
Lecturer in Public Health Bacteriology, University of Liverpool.

Since bacteriophage is known to be present in the intestinal tract and may play a mysterious but important part in the resistance of the individual to disease, I thought it worth while to test a few samples of fæces from cases of rickets for the presence or absence of bacteriophage. The test was accordingly done on 15 cases which were all under treatment, but in different stages according to X ray findings. The following technique was adopted:—

Fæces were incubated in peptone broth for 18 hours at 37° C., filtered through filter paper and then through a Chamberland filter. Each filtrate was then tested against four-hour cultures of typhoid, paratyphosus B, Shiga, Hiss, and Flexner. A standard loopful of culture was rubbed over an agar slant and 5 drops of filtrate run over the slant, which was then incubated for two hours at 22° C. and 18 hours at 37° C. To judge the strength of bacteriophage the following code was used:—

0	No action.
†	A few plaques.
††	Many plaques, but countable.
†††	Only isolated colonies of bacteria.
††††	An occasional colony.
†††††	Slant remains sterile.

It was found that a laboratory strain of typhoid was acted upon in several instances. As this is most unusual, a second more recently isolated strain was included in the tests and called "typhoid H." The table shows the results obtained, controls being sterile in all cases.

Bacteriophage Experiments.

No.	X ray.	Typhoid.	Hiss.	Shiga.	Flexner.	No.	X ray.	Typhoid.	Hiss.	Shiga.	Flexner.
1	Heal.	†	†††	†††	0	9	Cured.	0	0	0	0
2	Sev.	†††	††	††	0	10	,,	0	0	†††	††††
3	Imp.	†††	†	†	0	11	Imp.	†	†	†††	††††
4	Cured.	††	††	††	0	12	,,	††	††	†††	††
5	Sev.	0	†	?†	††††	13	Cured.	0	0	0	0
6	,,	0	0	?†	††††	14	Sev.	0	0	0	0
7	Cured.	††	††	††	†	15	Cured.	0	0	†	0
8	Imp.	††	††	††	0						

Typhoid H.—Expt. 12, †; in the other experiments, no action.
Para-B.—No action in any experiment.
Heal. = healing; sev. = severe; imp. = improved.

No important differences in the bacteriophage present were noticeable in these cases, although the disease was in different stages. Nor does the absence of bacteriophage active against the cultures tested appear to differentiate "cured" cases from a severe one. Activity against Hiss, Shiga, and Flexner is common in fæces from normal people, and was even found in a baby 12 days old.

The bacteriology of the fæces of 23 rachitic and 36 normal children was also investigated for predominance of fermentative or putrefactive organisms. The fæces of 11 out of 36 normal children showed putrefactive organisms. In rachitic children, 15 out of 23 showed putrefactive organisms in the fæces, which is a much higher percentage than in normal children. The ages of the children varied from 18 months to 4 years, and they were all on a mixed diet.

The work formed part of an investigation of various aspects of rickets which is being done during the tenure of the Virol Research Scholarship in Clinical Pathology in the Bacteriological Department School of Hygiene, University of Liverpool.

The writer has pleasure in acknowledging indebtedness to Dr. Dingwall Fordyce, physician to the Royal

Liverpool Children's Hospital, and to Colonel P. McDiarmid, superintendent of Alder Hey Hospital, for free access to cases under their charge.

A CASE OF TETANUS.

By S. M. Power, M.B., B.S. Lond.,
LATE HOUSE SURGEON, LONDON HOSPITAL.

An interesting case of tetanus, which may throw some light on the value of serum treatment, was recently admitted to the London Hospital under the care of Mr. E. C. Lindsay, with whose permission the following notes are published :—

The patient, a boy of 18, had 24 days previously punctured the sole of his foot with a rusty nail; the wound was quite small and was treated in the usual way. Seventeen days later he complained of pain and stiffness in the back, and for three days before admission there was trismus with generalised spasms. The true state of affairs was then recognised, but serum was not given for another two days, when an injection of 15,000 units was given intramuscularly. The patient was admitted to hospital the following day.

On admission he looked pale and was sweating profusely. There was typical risus sardonicus and marked rigidity of the abdominal muscles. The leg on the affected side was held somewhat stiffly extended. Passive movements in the joints were not difficult, with the exception of the ankle-joints, where dorsi-flexion was inhibited. The patient was given general anæsthesia and 20 c.cm. of cerebro-spinal fluid were drawn off; the pressure was considerably increased, but subsequent microscopic examination revealed no abnormality; 15,000 units of antitoxin, in a corresponding amount of serum warmed to blood heat, were immediately injected into the theca. As there was no pronounced respiratory embarrassment gr. ¼ of morphia was given, and a quiet night ensued.

Next day the condition was considerably worse. There was marked cyanosis, rigidity had increased, and generalised spasms began later, with flexion of the upper limbs and marked opisthotonos. Unconsciousness supervened and there was incontinence of urine. The patient was put in seclusion at midday. The spasms continued, numbering altogether about 50, but at about 7 P.M. consciousness gradually returned. Through the night spasms were very frequent and at times respiration completely ceased. There appeared to be increased sensibility to pain, and in the early morning it was deemed advisable to give morphia, which gave considerable ease; the movements ceased for four hours, during which the patient slept quietly. He was awakened by a very violent spasm but dropped off to sleep again. A fairly comfortable morning ensued, but spasms set in again in the afternoon, with considerable distress, the patient moaning loudly with each spasm. It was noticed, however, that he had regained power over movements of the jaw, was able to take fluids, and to answer questions. During the latter part of the day two doses of chloretone, grs. x. in glycerine dr. i., were given without much effect. That night a further injection of morphia gave considerable relief and a long sleep. After this definite spasms ceased.

During the following day he dozed, with occasional fits of restlessness accompanied by loud moaning. Consciousness was complete and there was no difficult in feeding. Now that the spasms had ceased, chloretone appeared to be effective in giving the patient the rest which he needed. 9000 units of antitetanic serum were given intravenously. A fairly quiet night ensued, chloretone being given three times and producing a definite effect each time. The jaw muscles were still very stiff and the head retracted. A further dose of 10,500 serum units was given intravenously on the following day. Recovery was now uninterrupted. Two more doses of serum were given intramuscularly on two successive days. The stiffness gradually disappeared.

On the sixth day after the first intraspinal injection, a well-defined erythema appeared on the back with vesication over the hips and buttocks. It caused considerable irritation and later spread all over the body. Lotio calaminæ was applied with good result and calcium lactate, grs. xxx., was given in the hope that it might accelerate the clearing up of the rash, which began to fade three days later. In the meantime rigidity had, to a large extent, disappeared, although there was still some stiffness in the muscles of the leg and abdominal wall. Recovery from this time was remarkably rapid and complete. The patient seemed little the worse for his experience, and was quite fit and able to get about the ward on his discharge to a convalescent home three weeks later.

It is a well-established fact that the longer the incubation period in a case of tetanus, the less severe are the clinical features and the better the prognosis; but in this case a relatively long incubation perio was followed by symptoms which were undoubtedl severe. For 48 hours the spasms continued at interval of 10 minutes, with the exception of two period after injection of morphia. During this time th condition was so bad that hope was lost and palliativ measures were alone considered. Once, however, th spasms had diminished in frequency and severity there was no setback.

If any conclusion can fairly be drawn, it is th value of early and large dosage with serum, par ticularly by the intrathecal route. Serous and eve purulent meningitis have been mentioned as com plications of this treatment, but must be very rar and the desperate nature of these cases would seen to justify the risk. The other point that arises is th value of morphia. This drug is not usually giver because of the respiratory difficulty, but here a least it apparently abolished the spasms, relieve the breathing, and procured much-needed rest. I might be considered an important factor in th recovery.

A CASE OF
EPILEPSY CURED BY OVARIECTOMY.

By R. R. S. MacKinnon, M.B., Ch.M. Sydney,
NEW SOUTH WALES.

This case seems to adduce evidence that dissocia tion of personality may be determined, in some case by alterations in the balance of the internal secretion of the ductless glands.

Two years ago I was asked to see a girl of 13 years. had attended at her birth and had attended the fathe mother, and other children for many years.

The child had suddenly developed a true epilept condition coincidentally with or shortly after the establis ment of her first menstrual activity. After a few weeks surveillance and treatment by the usual methods I aske the parents to seek further advice. They chose a doctor considerable knowledge and experience, but drugs an suggestion had no effect on the case. The child progre sively developed more frequent and more severe fits, an sank into a mental state of vacancy, irrational irritabilit and general mental and physical deterioration.

After 15 months' treatment, during which time I encou aged by suggestion all the efforts which were put fort the parents asked me to take over the case again. At th time a diagnosis of appendicitis had been made and confirme by X ray report. I presumed, with great diffidence, t disagree with this, as the clinical signs did not accurate endorse the diagnosis.

I took the following view of the case: Because the syn ptoms of epilepsy evidenced themselves at the onset menstruation in a formerly normal child, expressed then selves with greater violence at each menstrual epoch, an became worse and worse as the fuller establishment of th active reproductive powers came on; because she develope a pronounced enteroptosis of all abdominal viscera, possib due to endocrine derangement; because she was developin an enlargement of the thyroid, which had progressed about the size of a medium-sized apple, and because th thyroid is a friendly antagonist to the ovary; therefore seemed fair to opine that the symptoms were due to over-secretion from the ovaries, and that the tenderness ov the right side of the abdomen might be due to an abnorm ovary, not a pathological appendix. Further, that if it a legitimate procedure to remove half a thyroid for hype thyroidism, then it should be regarded as right to remo half the ovarian tissue in a hopeless case of this descriptio I put the position before the parents, and they were conte to leave the case to my judgment.

Dr. Steer Bowker consented to perform the operation an the site was approached by a median incision. The append was free and normal, but somewhat congested, like adjacent parts; this proved to be due to the state of th neighbouring ovary. The appendix was removed and th right ovary exposed and found to be at least twice the norm size, covered with multiple cysts, and congested. It w removed. The left ovary was normal except for one cy about half the size of a pea. This cyst was destroyed.

After the operation the whole facial aspect of the patie changed with miraculous rapidity. She lost the vacant loo which had been becoming more and more constant an marked and her intellect exhibited a marked "quickne

the uptake" under test conversations. *In six days the itre had entirely disappeared.*

In the second week of convalescence she had one attack unconsciousness, lasting four minutes and not accomnied by a fit.

Since then she has progressed, mentally and hysically, by leaps and bounds, as is shown by the llowing letter from her father four months after the peration :—

"It is a great delight to report the progress Joan has made cently. There has been a most wonderful change in her nce her operation. She is now an alert, bright, happy girl, king a very keen interest in her sewing, reading, music, and ench; in fact there is nothing that she is not interested . Physically there is also a great change. She has gained lb. since her return home, being now 9 st. 3 lb. in eight. She has a lovely fresh bloom on her cheek, and to all appears a most healthy girl. There has been no recurnce of any fits of temper or attacks of any description since r return."

The girl's health is perfect; her functions are curate. The enteroptosis has disappeared. Her terest in surroundings is identical with that exhibited any normal healthy child of her age. Her intelctual quickness and sense of humour are above the verage.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF MEDICINE.

A MEETING of this Section was held on April 24th, th Dr. A. F. HURST, the President, in the chair.

paper on the

ÔLE OF THE KIDNEY IN NON-RENAL DISORDERS.

as read by Prof. I. SNAPPER, of Amsterdam, who aintained that the kidney was not an excretory gan only, and that it was possible to talk about it a long time without mentioning the word excretion d using only the terms oxidation and metoxidation. was a most important factor in the normal etabolism of fat, and the metabolism of abnormal mostly took place there also. The kidneys must looked on as the principal organs where destruction ketone bodies occurred. Insulin had been found have a wonderful effect on diabetic coma, but from ne to time cases were met with in which insulin uld clear up all the hyperglycæmia, high ketonæmia, d acetone and diacetic acid in the urine, and yet e patient remained drowsy and died after one, two more days of drowsiness. Most clinicians explained ese cases as due to the impaired circulatory system; hough the abnormal constituents of blood and ne ceased, the cardiovascular symptoms remained. of. Snapper did not deny that these played an portant part, but renal symptoms could be disvered as well in many of the cases. Albuminuria s often present, and to some extent went parallel th the degree of ketonæmia. Both would reappear gether if the treatment were dropped. Külz had inted out that a symptom which might be regarded a signal of diabetic coma was a shower of renal sts. This proved that there was a connexion ween diabetic acidosis and impaired renal function. many cases of diabetes there was retention of urea the serum, and urea-retention was not infrequent diabetic coma. It had been suggested that oliguria ounted for this; if no water was being excreted urea had, of course, to accumulate in the blood. ulin had an influence upon the excretion of water, ducing oliguria, and possibly this anuric coma was a certain extent caused by insulin treatment. It s certainly much more frequently encountered ce the introduction of insulin. The explanation was , however, satisfactory, for diabetic coma might accompanied by polyuria with symptoms of urea-ention. Others had suggested that the urea-ention depended on abnormal protein metabolism, but this was not so. It had been proved that in these cases there was impaired excretion of nitrogenous substances by the kidneys during the coma. This was one of the most salient proofs that the function of the kidneys was impaired during diabetic coma. It was easy to suppose that excretion of all sorts of substances was also impaired. An early diabetic case which had been wrongly treated might form very large amounts of ketone bodies through inadequate nourishment. The hyperproduction might be so extensive that intoxication resulted even although the mechanism was unimpaired. Insulin would cut off the hyperproduction of ketone bodies and so cure the case. In an old diabetic, on the other hand, there had been prolonged intoxication and all the organs were impaired, including the kidneys. In this case a moderate production of ketone bodies would cause coma. Insulin would stop the ketonæmia, but the degenerated organs remained, and the patient died of impaired kidney function, of which the ketones were an indication. Pathological evidence of the impaired kidney function was not lacking. Coma kidneys had peculiar features, including a characteristic glycogen degeneration of the tubules. They were large and yellow, with fatty degeneration. There was often also a specific necrosis of the descending part of Henle's loop, hardly ever seen in any other kidneys.

The Swedish clinician Petrén had found that many acidotic diabetics could be treated satisfactorily with a high fat diet, provided that the proteins were strictly reduced. Fats were the main source of the ketone bodies in diabetic intoxication, and so most authorities restricted them, but Petrén had convinced those who had seen his work that this was unnecessary provided that the protein were reduced to 20 or 30 g. daily. Even a slight increase on the protein allowance would result in severe acidosis and coma. The elimination of nitrogen by the kidneys was their most difficult task, and Petrén's diet was one which spared the kidney function, so that the organ could destroy any amount of ketone bodies. It might be described as an alleviation diet for the kidneys.

Discussion.

Dr. R. D. LAWRENCE said that in his experience the case of diabetic coma which insulin could not cure was the case with marked circulatory deficiency rather than one with slightly damaged kidneys. It was an exception not to find casts and proteinuria in patients with diabetic coma, but the prognosis depended essentially on the condition of the circulation. It was almost possible to state from the start by the feel of the pulse whether the case would go into coma. He did not think it was proved that the small degree of proteinuria present really drove the patient into coma. Quite a number of diabetics had mild renal trouble and always passed some protein or casts; there was no proof that these were more liable to ketosis and coma than other cases. He agreed that oliguria was often present, but put this down as much to low blood pressure, making it impossible for urine to be secreted, as to any severe permanent kidney damage. He did not think any more ketosis was produced by a high protein and low fat diet than by Petren's diet. He asked if there were any quantitative data available as to the amount of ketone bodies secreted by the normal person, the nephritic, and the diabetic respectively.

Dr. E. P. POULTON said that in six out of nine cases of coma taken at random there was oliguria. He did not think that insulin quite explained the undoubted frequency—indeed, almost regularity—of diabetic coma. He had regarded the circulatory changes as the most important factors. A necessary part of the treatment of coma was to give large quantities of fluid, and this was not sufficiently emphasised. The fluid should be put into the alimentary canal. English physiologists had always regarded the liver as the organ which broke down harmful aceto-acetic acid into harmless β-oxybutyric acid, and he asked why Prof. Snapper had ascribed this function to the kidney.

Dr. GEORGE FAHR described recent work in the United States and in Germany, tending to show that the circulatory failure was a very important factor in diabetic coma. Measurements of the vital blood volume by the Congo-red method showed that fluid was lost from the system into the tissues, the blood pressure fell, the pulse became very rapid and of small volume, and the condition corresponded to that of advanced shock. Tannhäuser, in the Düsseldorf clinic, had found that the circulatory volume was quite remarkably decreased in diabetic coma, even to one-third or one-quarter of the normal, especially in those cases where insulin had been given without success. Sometimes it was impossible to restore the volume, and those were the cases that died. Where it had dropped definitely, nothing on earth would save the patient.

Dr. P. J. CAMMIDGE asked for some light on the statement that ketone bodies were destroyed by the kidneys. The whole difficulty about death from diabetic coma arose from regarding the condition as an entity. There were at least three or four varieties of diabetic coma, due to ketosis, to the kidney condition, to some failure of de-aminisation in the liver, and so on. He had known a patient die in coma without ever having had acetone bodies in the urine. Some 60–70 per cent. of patients had an increase of urea nitrogen, uric acid, &c., and often of creatine as well, so that there was a difficulty in excretion long before the onset of coma. Patients who developed coma were those who had a high urea nitrogen in the early stages; after treatment by insulin they relapsed. For this reason he had made a practice of restricting the nitrogen in the diet, which he believed to be as important as restricting the carbohydrate. Treatment must, however, depend on the type of patient; those with defective thyroid function required much more careful attention. Insulin might lead to a localised œdema, but later on many patients passed increased quantities of urine, even up to 9 litres daily. This was due to the fact that insulin combined chemically with the secretion of the pituitary. The total load the diabetic could manage was strictly limited, and any increase of either protein or fat must be accompanied by a decrease in the other.

Sir JOHN BROADBENT suggested that attention should be paid to the amount of ketone retained in the blood rather than to that passed in the urine. He asked whether ammonia played any part in neutralising fatty acids. Often a diabetic with albuminuria went on for a very long time, sometimes passing much albumin and much sugar. He asked what was the relationship of the amount of ketone bodies in the blood to that excreted in the urine in the diabetic and the normal subject.

Dr. PARKES WEBER asked whether any attempts had been made to raise the blood pressure in diabetic coma, and if so, with what success.

Reply.

Prof. SNAPPER, in reply, quoted a case with nothing abnormal in the urine save a trace of diacetic acid, who yet had 400 mg. per litre of diacetic acid and 500 mg. per litre of oxyacetic acid in the blood. The daily quantity of urine was normal. He asked how the death of this patient in coma could be explained on the circulatory hypothesis. Post mortem the kidney had been a typical coma kidney. A very rare symptom-complex in clinical medicine was that consisting of urea-retention with no oliguria, combined with low blood pressure. It was quite peculiar to renal insufficiency, which had nothing to do with a granular kidney. Cardiovascular symptoms without renal symptoms would not explain all the cases encountered. Renal difficulty could be demonstrated in a coma case by the phenolsulphophthalein test, which would reveal delayed excretion seven or ten days after "cure" by insulin. Very small amounts of protein could bring about disbalance between carbohydrate and fat. Obviously if the kidney had only a small amount of water at its disposal it could only excrete a small amount of toxic substances. Th opinion that the liver acted on diacetic acid had bee based on inadequate perfusion experiments. A dog liver perfused with 500 mg. of β-hydroxybutyric aci yielded up only 100 mg. at the end, and 200 mg. diacetic acid. It was therefore assumed that th 200 mg. which had disappeared had been oxidise In those days it was impossible to analyse the liv substance. With modern biochemical methods it wa possible to prove that the liver absorbed the missin 200 mg. of β-hydroxybutyric acid during the exper ment. It did not absorb diacetic acid, because th surface tension was quite different. If the liver wer perfused with diacetic acid the liver would be foun to take up a good deal of it in the form of β-hydrox butyric acid. If benzoic acid were perfused throug the kidney with glycocoll, hippuric acid resulte There was a whole series of homologues of benzoic aci each with one CH_2 group more than the one belo These groups had been named α, β, γ, and so o In vitro oxidation in the β group had for long bee unknown, and therefore it had not been recognised i vivo. Now it was known that β fatty acids are oxidis in the organism. If a dog's kidney were perfus with β-hydroxybutyric or diacetic acid a lar amount would disappear—some 160–200 mg. in tw hours—so presumably a man's kidney, working f 24 hours, could oxidise a considerable quantity. A fat normally digested went through β-hydroxybutyr and diacetic acid stages. These were not found normal urine, being destroyed by the kidneys.

SECTION OF EPIDEMIOLOGY AND STAT MEDICINE.

LATER PHASES OF ENCEPHALITIS LETHARGICA.

A MEETING of this Section was held on April 27t when Dr. MONCKTON COPEMAN took the chair, and discussion on Post-encephalitis and its Problems w opened by Dr. ALLAN PARSONS.

Ten years had now passed, he said, since encephali lethargica was first recognised in this country. Sin then something had been learned of the epidemiolo of the disease, its sporadic occurrence, its comparati prevalence in the colder months of the year, i special incidence in adolescence, its impartiality f the sexes, its indiscriminate incidence in all soci grades, and its seeming independence of insanita conditions. Much had still to be learned about t way in which it spread, its epidemiological relatio with other diseases, and its relatively high inciden in this country as compared with abroad. The clinic zeal first brought to bear upon the strange syndro was still needful, since differential diagnosis might difficult, and the primary attack so slight as to esca recognition. The disease was really of small p portions, however; in 1926 encephalitis lethargi attacked only 0·06 per 1000 of the populatic and though the case-mortality was certainly hig the toll it took of the general population in 19 was only 34 per million living, as compared with 9 and 1362 respectively for tuberculosis and cancer.

Types of Case.

By post-encephalitis Dr. Parsons meant th chronic phase of the disease which often su ceded the acute attack and was marked various symptoms which might be relics, resid or after-effects. From the administrative po of view it was useful to classify the suffer rather than the sequels, and he grouped the into three classes: those with mainly physi sequels, those who chiefly showed mental deterio tion, and those who exhibited demoralisation. Amo the physical sequels none was so well known Parkinsonism, which was so common and import that it was regarded by some as almost synonym with post-encephalitis. One table which he show indicated mental sequelæ in 27 per cent. of cases, t this was probably an under-estimate, and in t Sheffield outbreak (1924) mental symptoms were s to have remained in 53·6 per cent. Post-encephali

tients with mental symptoms might broadly be vided into the excitable and restless and the pressed. The former included the very common cturnal restlessness with inverted sleep rhythm in ildren. In lists of the sequels of encephalitis in ildren this disorder appeared always first or second frequency, and probably occurred in 76 per cent. of venile post-encephalitis. An altogether different cture was presented by the passive or depressed pe of patient. Inability to make any progress at hool was due to dulled intelligence, impaired emory, and perhaps drowsiness, rather than to the stlessness, impatience, and lack of concentration hich made teachers despair of the excitable type of ild. Children in the advanced stages of Parkinnism provided examples of the passive type of case, t it was mainly adult patients who suffered from ental anergia. The mental disturbance in both pes of case might be severe enough to justify rtification; the irritable, mainly for the sake of hers, were admitted to institutions as suffering om hallucinations, with homicidal tendencies or ania; while the depressed, mainly for their own ke, were admitted by reason of melancholia, suicidal pulses, or complete dementia. In the third class, ose who exhibited demoralisation, to speak of anges in conduct was almost to speak of postcephalitis in children, but intellect in such children s often unimpaired, and in fact they might even pear strangely bright.

Care of Children and Adults.

Patients with post-encephalitis might conveniently divided into two classes, according to whether the ness began before or after the age of 18. It was en difficult to decide whether the advantages of eping a post-encephalitic child working as far as ssible among normal children were not cancelled the disadvantages to the other children arising m the presence in their midst of one or more pupils ose conduct and disposition had become abnormal. nerally speaking, except when children had only nt traces of their illness, a return to their usual hool was impracticable. For some the schools for ckward and mentally defective children would ovide the extra individual attention and patience cessary to re-educate the diminished power of ncentration and arrested intellectual development. om 1920 to 1927 the Home Office schools received 13 children of this type; of the 57 discharged, 5 showed no permanent improvement, and of the 4 remaining (2 had died), 10 were considered unsuite for further retention. Attempts to train such ldren in Home Office schools were not justified by results obtained. In any case committal to Home ice schools was for a limited period only, and the ng offender—if he had not meanwhile come under Board of Control—must eventually be released, l either passed into employment, sent home, or ced under the care of guardians. Up to the end last year the post-encephalitic delinquents usually l no difficulty in avoiding the Board of Control ause many of them were not considered mentally icient, and because, where there was undoubted iciency, this had not existed from birth or early , and the patient therefore could not be certified ording to the liberal interpretation of the Act. th the passing of the amended Mental Deficiency , however, the technical difficulty of the principal was removed, and this with the new definition "moral defectives" should prove helpful in ling with troublesome post-encephalitics. In the jority of cases the disposal of the patient in a table mental deficiency institution was probably best course.

Dr. Parsons next described the position of the dult who returned home after prolonged illness in pital. The family realised that the returned ient had altered in various ways and did not me his accustomed rôle. He might be subject to less wandering, confirmed melancholia, lost initia, impaired memory. Difficult problems were thus duced in the domestic circle, and when the powers and patience of the relatives reached breaking-point the removal of the patient from home became urgent. There was often, however, much difficulty in finding a suitable refuge. A certain number, by reason of melancholia, suicidal impulses, or general insanity, became certifiable, and found asylum either in mental hospitals or in the mental wards of poor-law institutions. Sufferers below the age of puberty might be placed under special care and homely discipline. An institution like the post-encephalitic unit at the Metropolitan Asylums Board's hospital at Winchmore Hill, offered some hope of improvement for the less demoralised juveniles. Some of the difficult cases who had reached puberty would in future be dealt with under the Mental Deficiency Act, 1927. The adult patients, as a class, did not require re-education and control so much as relief from anxiety and expert attention to their physical needs. For the large majority of such the poor-law institutions offered a refuge. In Bristol, Glasgow, and a few other places the local guardians had recognised the needs of post-encephalitis patients, and in collaboration with other local bodies had made special provision for them. The Board of Control had also realised that patients whose mental symptoms were due to encephalitis lethargica needed particular study, and provision for such patients was made at the West Park Hospital, Epsom, and at four or five other mental hospitals in the provinces. In conclusion, Dr. Parsons urged the necessity for further research to include the coöperation of all those interested in this subject, whether from the administrative, clinical, or any other point of view.

Discussion

The PRESIDENT said that Dr. Parsons had painted a somewhat depressing picture, but had rightly laid stress on the fact that the actual number of cases was relatively small. It seemed regrettable that notwithstanding all the work of clinicians and bacteriologists during the last ten years so little was known about this disease. It could not even be prophesied what was likely to happen—whether such a peak of the disease as occurred in 1924 was to be repeated. He wondered whether any means of treatment had been worked out along similar lines to the malarial treatment of general paralysis of the insane.

Dr. F. C. SHRUBSALL gave some recent statistics for London, concerning 403 cases which had been investigated during three years. Of this number 227 were still showing definite after-effects; 76 of these were paralysed or had Parkinsonism, and 105 were mentally or morally affected. The death-rate during the whole period had been 37 per cent.

Dr. J. D. ROLLESTON raised the ætiological question as to whether this disease attacked any particular class of persons. The suggestion had been made that it attacked those who had already some mental taint, but that view could not be sustained.

Dr. GRAHAM FORBES asked whether the mild cases were not liable often to develop the more serious sequels. He also mentioned an instance of familial susceptibility—a brother and sister (adults) both being infected, though at the time of the sister's infection and death the brother was abroad, developing the disease on his return home.

Dr. N. G. HILL mentioned a case in which malarial therapy was tried, but the patient became much worse, though there was slight relief at the close when quinine was used.

Dr. D. S. SUTHERLAND said that the late features might develop in quite slight cases. Ultra-violet baths seemed to act as an excellent tonic in such cases, but the cases in hospital were most benefited by the discipline and regimen of hospital treatment.

Dr. W. S. C. COPEMAN asked whether he was right in supposing that the only aspect of the post-encephalitic syndrome which interested the public authorities was the mental deficiency. Did the post-encephalitis unit include anything like systematic treatment of the other disorders, such as insomnia and salivation?

Dr. THOMAS CARNWATH had noticed that where the infection seemed to persist for many months

another case might eventually occur in the same home. The authorities responsible for treatment only burdened themselves with such cases as were referred to them by the school authorities or by the parents through difficulty in control either at home or school, and there were no doubt a good many cases with minor defects which did not come under the authority.

Dr. CLARK TROTTER said he had had to employ sanitary inspectors to elicit the information about the after-history of cases required by the London County Council, and as a consequence of Dr. Parsons's paper he would study their returns with more attention than he had so far devoted to them.

Dr. PARSONS, in a brief reply, said that the path of infection was probably through the nose. He had not been able to find that food was a source of infection. As a general rule the mild case did not give the bad sequels. Most of the bad sequels followed a severe primary attack.

Reviews and Notices of Books.

PROTOZOOLOGY.

Lehrbuch der Protozoenkunde. Founded by FRANZ DOFLEIN. Fifth edition. Revised by Prof. Dr. EDUARD REICHENOW, Departmental Director at the Institute for Marine and Tropical Diseases, Hamburg. Part I. Allgemeine Naturgeschichte der Protozoen. Jena: Gustav Fischer. 1927. Pp. 436. M.21.

THE fourth edition of this well-known text-book of protozoology was published in 1916, a few years before the death of the author. Since then many important changes have occurred in our conception of the protozoa, so that a fifth edition, revised by such a well-known protozoologist as Dr. Eduard Reichenow, will be welcomed. The book is divided into two sections, the first dealing with the natural history of the protozoa in general, and the second with the systematics of the group, and the special natural history of individual organisms and groups of organisms. The first section has been issued as a separate volume, the second section being promised for an early date.

The volume is divided into five parts—general morphology and physiology of the protozoa, reproduction and development, œcology, technique, and literature. Under these headings an excellent account of the general features of the protozoa has been given. As in previous editions, the subject has been dealt with from the purely zoological standpoint, and though due reference to parasitic forms, including those which produce disease, is made, no special emphasis is given to them. The text is clear, the general arrangement is good, and the 388 illustrations, many of them appearing in this text-book for the first time, are admirably selected. The discussions are lucid and well balanced, so that the whole account faithfully presents the modern aspect of the subject. The author favours the view that protoplasm is structurally a colloid. He adheres to the unicellular conception of the protozoa for, though it is evident that as an individual organism a protozoon corresponds with one of the higher multicellular organisms, this does not prevent a protozoon, from another point of view, being regarded as corresponding with a single metazoan cell, which in many cases conducts itself as a single protozoon. In connexion with nuclear division important recent work on the behaviour of chromosomes and centrosomes is reviewed and illustrated, while the subject of chromosome reduction in connexion with syngamy is carefully discussed in the light of recent work. As regards extranuclear chromatin great importance is attached to Feulgen's reaction which affords a reliable test of the nature of any granule in the cell. By its means it has been possible to exclude from chromatin many granules which were supposed to be of this substance. The recent work of Dogiel on conjugation as it occurs amongst the ciliates which inhabit the intestinal tract of ruminants is noted. Developmental cycles, regener tion, variation, and heredity are fully discussed, whi under œcology sections are devoted to a considerati of incidence and geographical distribution, mari and fresh water protozoa, soil protozoa and parasit protozoa, with special reference to the origin and ty of parasitism, the influence of parasitism on t organisms themselves, the relations between host a parasite, the transmission of parasites, and finally t parasites of protozoa. In the technical section a described the most important methods which a required for the study of the free-living and parasit protozoa, as also the more recently devised process for the cultivation of the parasitic forms. The refe ences to literature are classified according to the ma subdivisions of the book. There is no index, but o will doubtless be issued with the second part, t intention evidently being to bind the two together t form one volume.

The work will be widely read, and will form standard for reference and study for all serio students of protozoology.

THE ESSENTIALS OF OTOLOGY.

By GEORGE BIRMINGHAM MCAULIFFE, A.B., M.D F.A.C.S., Assistant Professor of Otology, Corne Medical College. London and New York Humphrey Milford, Oxford University Pres Pp. 177. 16*s*.

Dr. McAuliffe holds that the majority of books o this subject are written to show the full scope otology, are suitable only to the specialist, and includ much information that the general student will nev read and never use. He is surely in error here, f there are many excellent small manuals on otolog especially written to satisfy the needs of the stude and general practitioner. The book before us can b fairly ranked among these; the style of writing didactic, as it must necessarily be in a concise wo of this kind, but the teaching is, on the whole, a reliab reflection of present opinion, though there are, course, a few points which will not meet with univers agreement. Thus, he uses no stitches after t "acute" mastoid operation, but leaves the ski wound entirely open; he appears to recommen syringing as the regular treatment of acute suppurati otitis after spontaneous or surgical perforation the drum; and for the diagnosis of adenoids b considers digital examination the best method, an does not describe posterior rhinoscopy at all. T chapter on anatomy, which he thinks may discoura the student, has been relegated to the end of t volume. The rather inconvenient method has bee adopted of discussing treatment in a separate chapt towards the end of the book; this leads to ove lapping, compels the student to refer to two separa places for one subject, and in one case at least, th of furunculosis, appears to have led to the omissi of treatment altogether. We believe that mo students would prefer a work arranged in a mo orderly manner, but practitioners may find t arrangement less inconvenient.

TEXT-BOOK OF CLINICAL NEUROLOGY.

By ISRAEL S. WECHSLER, M.D., Assistant Pr fessor of Clinical Neurology, Colombia Universit New York. London and Philadelphia: W. Saunders Company. 1927. Illustrated. Pp. 72 32*s*. 6*d*.

THE purpose of the author has been to set down straightforward fashion a digest of nervous diseas as they are known and recognised to-day, and b book has grown out of his own clinical experienc and embodies what may be termed his person approach to bedside neurology. It follows accept lines in covering all the usual diseased conditions brain, cord, and peripheral nerves, and it includ sections on affections of the vegetative nervo system, developmental anomalies, the neuroses, a other "functional" states such as tics, spasms, a myoclonias. Possibly its outstanding feature is t

tention given to the pathological bases of these ervous diseases, which are illustrated as far as may e by a series of excellent photographs. The clinical ustrations, fewer in number, are also good. In ifferent chapters some effort is made to elucidate the ysiology of the symptoms described, notably in gard to the difficult group of striatal diseases, so lled, and this is well done even if knowledge has ot yet sufficiently advanced to allow of very definite nclusions to be drawn. Some 100 pages are assigned methods of examination, a section seemingly held be a sine qua non of neurological text-books; in is instance, however, it consists in large part of an terpretation of symptoms and signs.

Dr. Wechsler's book is readable and remarkably ide in its range, but at the expense of rendering me of the disease descriptions rather meagre and me of the semiological interpretations rather super-ial. Of this the neurologist soon becomes aware as reads through its pages; on the other hand, it rves its purpose well, and for the student and prac-ioner it appears to constitute a useful compendium practical neurological medicine.

HE SPRINGS OF HUMAN ACTION.

By Prof. MEHRACK THOMPSON. London and New York: Appleton and Co. 1927. Pp. 501. 10*s.* 6*d.*

IN spite of the vast literature that is growing up psychological topics, there appears still to be room r books dealing with psychology in general. Both iblisher and public are apt to grow weary of this er-increasing pyramid of literature. But as long each author presents his subject from a new angle great harm is done. Particularly so to-day, eing that the new orientation in psychology—the namic standpoint—is hammered into the minds of ose who await instruction. It is for this reason at Prof. Mehrack Thompson's book deserves a lcome. Whereas Dr. J. B. Watson's psychology s reduced man to a physiological Robot—reflecting, doubt, the material success of the New World of. Thompson represents the young and enthusiastic nerican overflowing with creative will. He attacks ychology from the point of view of motive. He ens with the Urge of Physical Activity—Automatic ts—Habits and Instinctive motive, and passes wards in crescendo to the more complex springs actions—feeling—interest—ideas—personality—all garded as psychological complexes which reinforce, ect and redirect the fundamental drives. Later, e group activities are themselves used as motives action, and here suggestion and auto-suggestion me to full flower in the author's opinion. As can expected, this treatment of the subject leads to an traordinary amount of repetition. The lowest ocesses, as we have discovered in the study of ychopathology, are always present in the highest our activities, and it is not always possible to say at at a given level the complex situation at the oment is acting as a whole and in virtue of its n intrinsic properties, or whether it is still driven ward by fundamental urges.

The result is that we are obliged to read through a ry large book which might with very little sacrifice usefulness and readableness have been reduced to lf its present size.

OSQUITO REDUCTION AND MALARIA PREVENTION.

Second edition. By J. A. CRAWFORD, M.B., Ch.B. Edin., Capt. R.A.M.C.; and B. S. CHALAM, L.R.C.P. & S. Edin., L.R.F.P. & S. Glasg. London: Humphrey Milford, Oxford University Press. 1927. Pp. 107. 4*s.* 6*d.*

THIS small book is written for the benefit of the alaria inspector, the N.C.O. in charge of an anti-alaria sanitary squad, or indeed of everyone whose siness it is to destroy the anopheline vector of alaria, and who requires sound elementary know-ge to make his action effective. The book meets e demand; it is clearly written, satisfactorily ustrated, and has always in mind the practical daily needs of the field-worker. Among the useful appendices is a key to the female Indian anophelines, issued by the Central Malaria Bureau, Kasauli, while in the text there is a table showing their breeding habits and their distribution in India, together with comments which include an indication of those species which are actually malaria carriers.

The authors tend to stress those aspects of anti-malarial work with which they are mainly concerned—one sentence might be read as advice to discard mosquito nets, while elsewhere they throw doubts on the value of quinine in the fight against malaria. A suggestion, in spite of the book's title, that for the abolition of malaria an area must be rendered free of mosquitoes, is open to criticism. These points will perhaps be cleared up in a third edition. This, too, will afford the opportunity to eliminate such unexpected spellings as "larvacide," "*Stegomya faxiata*," and "*A. azriki*," and to rectify the slip which, in one place, mentions as masculine the adult anopheles sought for in houses.

The book is one of several, of varying range and size, which have recently appeared dealing with malaria in India. It could give good service elsewhere, and it forms a useful reminder that the malaria problem is essentially the same everywhere, and that other tropical parts of the Empire are unwise which do not take full advantage of the pioneer work which India has to offer them.

THE PEAKS OF MEDICAL HISTORY.

Second edition. By CHARLES L. DANA, A.M., M.D., LL.D., Professor of Nervous Diseases, Cornell University Medical College; ex-President of the New York Academy of Medicine. New York: Paul B. Hoeber. 1928. Pp. 105. $3.

THE last few years have seen a revival of interest in historical medicine, of which the demand for a second edition of Prof. Dana's book within two years of publication is proof. The author sketches briefly and clearly the progress of medical science from the time of Hippocrates to the middle of the nineteenth century, illustrating his text generously and well. For such of his readers, and we think there will be many, who are encouraged to dip more deeply into the subject, Prof. Dana adds a chapter of biographical notes.

JOURNALS.

NATURE. No. 3051. Vol. CXXI. April 21st, 1928. A supplement to this issue contains a series of concise articles by various authorities on different aspects of ultra-violet radiation. Some of the conclusions reached are summarised below. The Physical Basis of Light Therapy, by Prof. F. Ll. Hopwood. The author describes the spectrum of radiation, discusses the light used in therapy and its sources, defines the terms photo-electricity, fluorescence, phosphorescence, and explains the laws governing photo-chemical action. Prof. Hopwood points out that the reflecting, transmitting, and absorbing powers of a substance for light give no trustworthy indication of these properties for radiations in the infra-red or ultra-violet regions. Corning glass 980A transmits all solar radiations almost as freely as the more expensive fused quartz. Vitaglass resembles Corning glass 980A in its properties, but is not so transparent for equal thicknesses and also exhibits some deterioration in transmission after exposure to sunlight. Notes on the determination of quality and of intensity of radiation follow, while dangers, precautions, and contra-indications to light therapy are clearly set out.—Biological Action of Ultra-violet Rays, by Dr. Leonard Hill. The screening power of the epidermis and the penetration of radiations of various wave-lengths are discussed. The biologically active region of the ultra-violet rays is about 300 $\mu\mu$; these are largely absorbed by the epidermis and exert their action there. Given a sufficient dose of rays absorbed, coagulation and death of cells takes place. In lesser doses the inflammatory reaction increasse the bactericidal power of the blood, stimulates

recovery from certain skin diseases, and in some unexplained way promotes general vigour and well-being. The dangers of overdosage and the need for skilled medical supervision when disease is being treated are emphasised.—The Physiological Action of Ultra-Violet Radiation and its Use in the Home, by W. Kerr Russell. The author believes that the only form of this treatment which should be used at home is exposure of the whole body to the rays, preferably by means of the carbon-arc lamp, or by means of carefully screened mercury-vapour lamps. He summarises the precautions to be taken and discusses the immediate and remote effects of radiation on the body.—Ultra-Violet Radiation for Domestic Use, by Prof. S. Russ. The author considers that it is inadvisable and probably uneconomical to attempt to make good any deficiency of diet suffered by the general population by frequent doses of ultra-violet radiation. The risk run by repeated exposure of the body to a form of radiation to which it is quite unaccustomed is not negligible, and probably it would cost less to supply the deficient accessory food factor in the diet. The public cannot be prevented from using appliances for generating ultra-violet radiation in their homes, but they should not be advised to do so.—Medical Aspects of Artificial Sunlight in Private Houses, by P. R. Peacock. The establishment of more clinics where the poor, whose diet is short of fresh foods, can be treated under supervision is regarded as a more rational measure than the installation of sources of ultra-violet rays in the homes of well-to-do people whose vitamin intake and general conditions of life are relatively good.—Articles follow on the Selection of Lamps, by T. C. Angus and by B. D. H. Watters, and on the Ultra-Violet Transmission of Transparent Materials, by L. C. Martin.

AMERICAN REVIEW OF TUBERCULOSIS. February, 1928. Vol. XVII., No. 2.—In a statistical study of the relationship between pregnancy and tuberculosis, Miss Alice M. Hill suggests that hitherto this problem has been studied by the obstetrician who has had charge of women whose pregnancy has been complicated by tuberculosis, whereas a clearer understanding should result from a study of the tuberculous woman whose disease is complicated by pregnancy. A comparison of the condition of 160 women whose pregnancies accompanied, or immediately preceded, their tuberculosis with that of controls at one year and two years after diagnosis leads to the conclusion that pregnancy had no appreciable bearing on the progress of the tuberculous disease. The prognosis is bad, however, in the case of women whose tuberculous condition is only ascertained at a late stage of pregnancy. Thus, of the women whose disease was diagnosed before gestation, less than 1 in 12 had died a year after its termination, whereas for cases diagnosed during pregnancy the proportion was 1 in 5 and for those diagnosed after delivery, 1 in 3. As might be expected, the maternal mortality-rates for tuberculous women do not follow the mortality-rates for mothers in the general population in the matter of age at death, but correspond with the deaths at different ages of all tuberculous women.—Dr. H. B. Anderson discusses the tuberculous nature of pleurisy from the life insurance standpoint. Pleurisy with effusion is almost always tuberculous. Ordinary dry pleurisy is usually tuberculous, but care should be taken to differentiate between genuine pleurisy and the numerous other conditions in which pain is referred to the chest-wall—e.g., pleurodynia, myositis, and intercostal neuralgia. Patients who have suffered from these will often give a history of an attack of pleurisy. A patient of tuberculous stock, whose own physique is poor, who is underweight or is losing weight, and who has had an attack of pleurisy, should be regarded as a member of "a dangerous group which probably never become standard lives."—Drs. Saling Simon and Felix Baum present a preliminary report on their electrocardiographic studies in pulmonary tuberculosis. As the result of their investigations they conclude that the low potential sometime found in leads I. and III. indicates the condition of *cor pendulum*, which is frequently noted in phthisical subjects of asthenic type. A weakened cardiac musculature is suggested by the height of the T-wave, which they have found to be lower than the average in tuberculous individuals.—Dr C. T. Ryder writes on Innate Resistance to Tuberculosis (see p. 920).

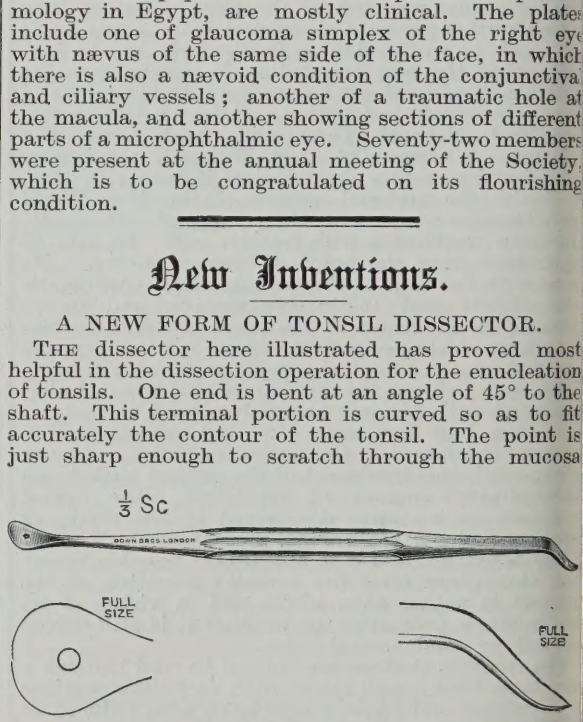
INDIAN PHYSIOLOGIST. No. 1. January, 1928.—This is a new venture in Indian medical journalism. The first number is almost wholly the product of the editor, who supplies interesting matter relating to some of the customs of Indian village life which have persisted through countless ages and for which he seeks scientific bases. He mentions, for example, the Hindu practice of worshipping the Sun God in a manner involving three 20-minute exposures of the uncovered body which resulted in many cures in devout tuberculous subjects. He explains certain native practices—e.g., the chewing of betel, as an attempt to supply deficiencies in a monotonous rice diet. If the journal is to make a wide appeal, the editor will have to be supported by the rapidly increasing number of Indian physiologists who are working on experimental lines.

BULLETIN OF THE OPHTHALMOLOGICAL SOCIETY OF EGYPT. Vol. XX. 1927.—This report runs into over 200 pages. The papers are nearly all by Egyptian-born members, while the subjects, except for historical papers on the development of ophthalmology in Egypt, are mostly clinical. The plates include one of glaucoma simplex of the right eye with nævus of the same side of the face, in which there is also a nævoid condition of the conjunctival and ciliary vessels; another of a traumatic hole at the macula, and another showing sections of different parts of a microphthalmic eye. Seventy-two members were present at the annual meeting of the Society, which is to be congratulated on its flourishing condition.

New Inventions.

A NEW FORM OF TONSIL DISSECTOR.

THE dissector here illustrated has proved most helpful in the dissection operation for the enucleation of tonsils. One end is bent at an angle of 45° to the shaft. This terminal portion is curved so as to fit accurately the contour of the tonsil. The point is just sharp enough to scratch through the mucosa



between the anterior pillar and the tonsil. Finding the correct plane between the tonsil and its bed is the key of success in this operation. This is perfectly easy in a large well-defined tonsil, but may be difficult in a flat adherent tonsil. The bent end of this enucleator makes the approach to the correct line of cleavage much easier. After the anterior pillar is separated from the tonsil the flat scoop end is inserted and the upper pole is separated and the whole tonsil stripped forward from the posterior pillar. The scoop end is admirably adapted for the latter part of the operation.

The instrument was made for me by Messrs. Down Bros., Ltd., St. Thomas's-street, S.E. 1.

T. B. JOBSON, M.D., B.Ch. Dub., D.P.H.
Guildford.

THE LANCET.

LONDON: SATURDAY, MAY 5, 1928.

PURPURA OF THE URINARY TRACT.

For many years surgeons have been puzzled to account for an illness with which they are occasionally presented, characterised by hæmaturia without any other symptoms. The condition has been called "essential hæmaturia," a name which has been objected to by some observers as begging the question of ætiology, though it must be admitted that the term has the merit of indicating that our present knowledge of the disease is confined to the single fact that the urinary tract bleeds. Kidneys which have bled in this way have been removed as a life-saving measure and examined microscopically; sometimes no real abnormality could be discerned, sometimes nephritic changes have been found. In other cases the bleeding has been supposed to come from enlarged veins at the apices of the pelvis, but all the explanations hitherto have been rather unsatisfactory. Mr. FRANK KIDD, in a presidential address to the Urological Section of the Royal Society of Medicine, which we print on another page, records his own observations in such cases and helps to clear our ideas on the pathology of a curious condition. He has shown that painless hæmaturia is sometimes one expression of a general tendency to bleeding, the obvious sign of a more generalised process. Such patients are apt to bleed from other parts of the body, purpuric patches being found sometimes on their limbs, sometimes in the mucous membrane of the bladder, where they may be revealed by cystoscopy. This last observation is suggestive. Most surgeons of experience will recall unexplained cases of hæmaturia in which hæmorrhages in the bladder wall were seen on cystoscopy and disappeared later, but in which the connexion with so-called essential hæmaturia was not recognised. Mr. KIDD would divide purpura of the urinary tract into two varieties: renal purpura, where hæmorrhages take place into the mucosa of the pelvis of the kidney and lead to exudation of blood down the ureter, and purpura of the bladder wall, in which the hæmaturia is accompanied by vesical pain and irritability. The true cause of the condition is still not very clear. It is surmised that there may be a deficiency of blood platelets, as in other forms of purpura, but this question has not yet been investigated. Another possible origin is a local infection of some kind. In support of this, Mr. KIDD describes purpura as recurring in three of his cases the day after the extraction of septic teeth; he has also seen severe purpura associated with a colon bacillus pyelitis.

Turning to treatment, Mr. KIDD found that in eight of 24 cases of renal purpura a nephrectomy was required to stop the hæmorrhage. Two of these however had recurrent attacks of hæmaturia of lesser degree, and two died within a few months although one kidney had been removed. Nephrectomy is not always required. It seems that an injection of anti-streptococcic serum is often effective in stopping the bleeding; the benefit so derived has been attributed to foreign protein, and a trial of plain horse serum or peptone has met with some success. Should these injections fail it would be worth while to try an injection of the patient's own blood (auto-hæmotherapy) or, finally, transfusion from a suitable donor before resorting to removal of the kidney. If it be proved in the future that there is a thrombocytopenia in certain of these cases it would be logical to remove the spleen, for splenectomy has proved effective in general purpura associated with alteration in the platelet content of the blood. The all-important question of how to recognise the disease still remains to be settled. Painless hæmaturia has so often been thought to be due, more than anything else, to a tumour, whether of bladder or kidney, that bleeding kidneys may in the past have been removed without necessity in order to prevent the spread of a malignant tumour. If a patient has painless hæmaturia and the blood is seen to come from one ureter, if infection of the urinary tract with the tubercle bacillus or other organisms can be excluded, if an X ray shows that there is no calculus in the kidney and there is a good passage along the course of the ureter for a fair-sized bougie, then it is essential to perform a pyelography. A tumour of any size is certain to distort the shadow thus obtained. If the pelvis and calices are of normal shape there is no need to contemplate a nephrectomy on the supposition that a malignant tumour is present; it is sufficient periodically to re-examine the patient's renal pelvis. A tumour, if present, will soon indicate its existence by alteration of the shadow. Mr. KIDD'S observations have gone some way towards clearing up doubt in a condition which has hitherto been obscure to the surgeon.

THE RARITY OF MULTIPLE PRIMARY MALIGNANT NEW GROWTHS.

In his recent Linacre lecture Dr. J. A. MURRAY [1] drew attention to an important aspect of carcinogenesis. In the experimental investigation of tar cancer in mice he found that the development of a malignant new growth frequently affects the whole organism in such a way as to keep in abeyance the subsequent development of a second malignant new growth. If this observation is correct the phenomenon should manifest itself also in man by the rarity of primary malignant new growths and Dr. MURRAY has quoted some figures in support of his view. It is curious that this phenomenon has received so little attention by pathologists in the past, for there must obviously be abundant material in the post-mortem records of the big hospitals all over the world and the example quoted by Dr. MURRAY is sufficiently striking. It refers to the post-mortem material for the preceding 21 years of the Pathological Institute in Budapest. In 1559 tumours autopsies only five cases of multiple primary malignant new growths were found—i.e., one case every four years. Further evidence bearing on this point is presented in a recent paper by Prof. D. M. CHAJUTIN,[2] of the Pathological Institute of the Odessa Hospital. In two tables the author has collected from the literature figures illustrating the rarity of multiple primary malignant new growths. The first table gives their number in reference to the number of autopsies.

[1] THE LANCET, 1927, ii., 800.
[2] Zeitschrift für Krebsforschung, 1928, xxvi., 263.

TABLE I.

Author.	Total autopsies.	Number and percentage of multiple malignant neoplasms.
Redlich	5002	8 (0·16)
Harbitz	3613	16 (0·44)
Feilchenfeld	5022	7 (0·14)
Nepryachin	6048	5 (0·08)
Medwedew	4638	2 (0·04)
Gade	4212	32 (0·76)

Table II. gives the number of primary multiple carcinomas in reference to the total number of malignant new growths.

TABLE II.

Author.	Total carcinomas.	Number and percentage of primary multiple carcinomas.
Hansemann	1000	5 (0·5)
Redlich	507	2 (0·39)
Reichelmann ..	711	2 (0·28)
Feilchenfeld	507	10 (1·97)
Spranger	417	6 (1·44)

When multiple primary malignant new growths occur, they are as a rule two primary carcinomas. A combination of a primary carcinoma with a primary sarcoma is rare. More than two primary multiple new growths are extremely rare, especially if they develop at the same time. According to the author only two such cases are recorded in the literature. ROESCH [3] records in a paraffin worker, aged 72, a carcinoma of the skin, of the bronchus, and of the stomach. The other case, recorded by GÖTTING,[4] was a man, aged 58, and suffering from a carcinoma of the larynx, of the stomach, and of the rectum. Perhaps more frequently a somewhat different condition is met with where a malignant new growth has been removed by operation and one or two primary new growths develop subsequently. In one such case observed by SALTYKOW [5] a woman had been operated on for cancer of the breast. When she died a year later a carcinoma and a sarcoma of the thyroid were found at autopsy. In this case the tumours of the thyroid may already have existed at the time when the mammary tumour was removed. But it would be difficult to interpret in the same way the case observed by HARBITZ.[6] This patient first developed a cancer of the lip. This was removed by operation and 13 years later he developed a cancer of the penis. This again was removed by operation. There were no local recurrences after either of these two operations. Six years after the second operation the patient, who was then 70 years old, died with a carcinoma of the stomach. Prof. CHAJUTIN records a similar case of this kind. A woman, aged 47, developed a mammary cancer which was treated by removal of the left mamma. Eleven years later she developed a cancer of the uterus. The uterus was removed by operation. Microscopic examination showed the existence of two malignant neoplasms: an adenocarcinoma and a squamous-cell carcinoma. Quite recently Prof. A. FULLERTON [7] has described in our columns a case in which a sarcoma of the breast was followed twenty years later by an abdominal carcinoma. The rarity of such cases and the significance which attaches to them make a published record of them a matter of considerable interest.

[3] Virchow's Archiv, 1923, ccxlv., 1.
[4] Zeitschrift für Krebsforschung, 1909, vii., 675.
[5] Zentralbl. f. allg. Path. u. path. Anat., 1905, xvi., 547.
[6] Ziegler's Beiträge, 1916, lxii., 503.
[7] THE LANCET, Jan. 7th, 1928, p. 26.

DISTEMPER IN FERRETS.

DISTEMPER in dogs has in the past presented a very solid obstacle to all attempts to avert or lessen the force of its ravages. The great variability in severity of the disease has induced hope from time to time that methods of cure or prevention were being discovered; but the fact that distemper is extremely infectious and the uncertainty as to the result of infection in any particular puppy have for a long time almost frustrated experimental researches. The discovery by H. Carré in 1905 that the disease was due to a filter-passing virus, though confirmed by J. Lignières in the next year, was not universally accepted. The *Bacillus bronchisepticus* advocated by N. S. Ferry and others had a vogue for some years as the causal organism, but must now be relegated to the part of a secondary invader answerable for certain complications. The researches of P. P. Laidlaw and G. W. Dunkin[1] working at the National Medical Research Laboratories for the Scientific Committee of the "Field" Distemper Council have confirmed Carré's observation, though they found that filtration through Mandler and Pasteur Chamberland L 2 filters did not take place very readily and required special conditions. They have made a number of interesting and important observations on the virus and on the clinical behaviour and pathology of the disease in dogs and ferrets; they have established the identity of experimental distemper in ferrets and then atural disease in dogs and have shown that the disease in the former animals has a fairly uniform, severe, and usually fatal course. In the ferret they had available an experimental animal which bred more rapidly than the dog, was much smaller, more easily housed and reacted regularly to experimental infection. The extreme infectiousness of the disease and consequently the great care needed in isolation, however, still provided formidable difficulties to their work. It was found that a susceptible ferret could not be kept in the same small room, 7 ft. 6 in. by 5 ft. 6 in., with an infected animal without becoming infected also, although the two ferrets were placed as far apart as possible and great care taken to avoid accidental transference. The infection appeared to be carried through the air. In spite of these difficulties experimental research has been possible, knowledge has gradually accrued, and a prospect of preventive inoculation is coming into view. In the most recent paper [2] by Laidlaw and Dunkin a definite and highly successful method for the prophylaxis of the disease in ferrets is described. The virus used in making the vaccine consists of ground-up spleen from ferrets killed on the fourth or fifth day of illness. Several methods have been used to render the virus non-infective for use as a vaccine. Heating, storage in 50 per cent. glycerine and treatment with phenol or formalin are all in some degree suitable, but the use of 0·1 per cent. formalin subsequently neutralised with ammonia has been adopted as the usual procedure. Formalin has been employed partly in consequence of the success which has been obtained with formalised virus in protecting guinea-pigs against foot-and-mouth disease. The vaccine does not keep very well and the difference between the time of treatment needed to make the virus no longer infective and that which entirely destroys the protective power of the vaccine is not very great. This progressive deterioration of potency suggested that an efficient vaccine perhaps still contained living virus either greatly attenuated or reduced to a small fraction of the original content, but the authors believe that the vaccine probably only contains dead virus. In order to produce a lasting immunity and one which protects against all strains of the virus, it is necessary to give a dose of living virus soon after the vaccination. After such a double inoculation a solid and lasting immunity was obtained without any sign of the disease. Since immunity following the natura

[1] Jour. of Comp. Path. and Therap., 1926, xxxix., 201, 213, 222
[2] Ibid., 1928, xli., 1.

isease is life-long, it is hoped that the protection ollowing this prophylactic treatment will prove qually durable. The preparation and preservation f the vaccine still present difficulties and the need for living dose to complete the immunity is an undesir-ble complication. This is especially disconcerting ince the dose of living virus though not causing any vert symptoms of distemper has appeared in some nstances to have caused the animal to become a carrier or a time. A further paper describing the results of xperiments with dogs along similar lines is promised n the near future.

Annotations.

"Ne quid nimis."

THE AUSCULTATORY GAP.

In estimating blood pressure by the auscultatory ethod the orthodox procedure is to raise the pressure the armlet to about 200 or 250 mm. of Hg and nen allow it to fall slowly until the characteristic ounds can be heard over the brachial artery imme-ately below the point of compression. As the essure continues to fall the sounds change both quality and intensity. At first they are clear but int; later, they are accompanied by a rushing urmur; then they once more become sharp, at st increasing in intensity and then diminishing. inally, the sharp sounds are abruptly replaced by dull thud, and when the pressure has fallen another w millimetres the sounds die away. The first ppearance of the sounds marks the systolic, and the dden transition from sharp to dull sounds the astolic pressure. In most subjects the arterial unds conform fairly well to this description, and e determination of systolic and diastolic pressures easy. Sometimes, unfortunately, this is not so; e transition from the sharp sounds of the third ase to the dull sounds of the fourth phase, instead being abrupt, is gradual, and extends over a range 20 mm. or more, affording no satisfactory diastolic d-point. The determination of the systolic pressure nerally presents less difficulty, but a possible source error, first pointed out by French and American rkers some ten years ago, may occasionally lead a wrong reading. In certain cases the normal quence of the Korotkow sounds heard during compression is interrupted by a zone of complete ence. This silent interval or "auscultatory gap," it has been termed, usually replaces, in part or ole, the sounds of the second phase—i.e., those ich are accompanied by a murmur. From a agnostic point of view this is of some importance, ce it may lead to an under-estimation of the stolic pressure, the sounds preceding the auscul-ory gap being missed and their reappearance ing taken as the systolic reading. Such a mistake n easily be avoided by first estimating the systolic essure by palpation, a technique which is to be ommended, since it eliminates the necessity for mitting the patient to the needless discomfort a high initial compression when his blood pressure within normal limits.

The "auscultatory gap" was first noticed in cases aortic stenosis, but subsequent observations ve shown that it is not confined to that condition, t is frequently associated with hyperpiesis. Such s the common factor in a series of four cases ently reported in this journal by P. C. Gibson,[1] d in 28 out of 30 cases reported in America by G. Mudd and P. D. White.[2] Various hypotheses ve been put forward as to the mechanism of pro-ction of the "auscultatory gap," and an explanation its presence is to be sought in considering the ferent factors concerned in the production of the rotkow sounds. Of these the first and most obvious are rapid vibrations in the arterial wall and eddies in the blood stream. Vibrations in the arterial wall depend, first, on the tension and structure of the wall, and, secondly, on the form of the pulse-wave. The steep wave-front of the typical Corrigan pulse of aortic incompetence produces a sudden shock which excites violent vibrations in the artery, whereas the slow-rising anacrotic pulse of aortic stenosis can slip through almost unnoticed. It is like a finely tapered wedge which glides quietly and smoothly into place. The sphygmogram in hyperpiesis is not unlike that of aortic stenosis, the upstroke rising gradually to a well-sustained plateau. Consequently, in both these conditions the force acting upon the arterial wall is such as to excite but little commotion. To turn now to the second factor—the condition of the wall on which these forces act. Decompression is divisible into three stages. During the first stage the compressing pressure is considerably higher than the diastolic pressure. During the second stage it is only slightly higher, and during the third stage the compressing pressure is lower than the diastolic. It is therefore only during the third and last stage of decompression that the effective internal pressure is sufficient to keep the arterial wall on the stretch throughout the whole cardiac cycle. During the first two stages the artery collapses more or less completely in diastole. Further, during the first stage of decompression the external is so much greater than the internal pressure that the passage of the pulse-wave cannot stretch the artery sufficiently to produce violent vibrations, such as occur during the second stage, which corresponds to the maximal oscillations as recorded by Pachon's or Erlanger's instruments, and to the sharp loud third phase sounds heard on auscultation. It is easy to understand why the slow rising pulse of aortic stenosis, or of hyperpiesis, may fail to produce rapid vibrations in the artery during the earlier stages of decompression, but it is more difficult to explain why the sounds, having once made their appearance, should afterwards die away as the compressing pressure falls. The most likely explanation of this curious phenomenon appears to be that the accumulation of residual blood in the artery during the second stage of decompression acts as a damper which further limits the vibrations of the arterial wall.

[1] THE LANCET, 1927, ii., 1012.
[2] Arch. Int. Med., 1928, xli., 249.

RESEARCH ON POLIOMYELITIS.

In no field of medical practice is new knowledge more urgently desired than in that of the neurotropic viruses. The necessity of employing monkeys for the experimental study of these viruses has impeded progress by reason of the heavy cost involved, and although it is nearly 20 years since Landsteiner showed that the virus of poliomyelitis could be transmitted to monkeys, it is doubtful if the knowledge we have since gained of this and other neurotropic viruses has materially clarified the preventive and therapeutic outlook. On the practical side little has been discovered about the prevention and control of infantile paralysis in spite of the intensive study which has been given to the problem. The present is a favourable time for a new attack on the problem, for the last decade has witnessed considerable developments in our knowledge of virus diseases and their methods of attack. The medical profession will therefore welcome the formation of an international committee for the study of poliomyelitis under the distinguished chairmanship of Dr. William H. Park, director of the Bureau of Laboratories of the New York City Health Department. Arrangements have been made for a concerted three-year attack on the difficult problems of prevention and therapy presented by this formidable and crippling disease. To enable research to be carried out at a number of centres, both in the United States and in Europe, a sum of $250,000 has been given by Mr. Jeremiah Milbank, a prominent New York financier who takes an active personal interest in hospitals and charities. The following are the centres which have been chosen

for the proposed researches: Bureau of Laboratories, New York City Health Department, the Pathological Institutes of Columbia, Harvard, and Chicago Universities, the Pasteur Institute, Brussels, and the Lister Institute, London. As the work progresses it is hoped to enlist the coöperation of other institutions and laboratories. The various institutes are represented on the international committee by their respective heads, and the full personnel of the committee is as follows: chairman, Dr. W. H. Park; vice-chairman, Dr. J. A. Blake (New York); Drs. E. O. Jordan and Ludvig Hektoen (Chicago), Drs. F. P. Gay and Frederick Tilney (Columbia), Drs. Milton J. Rosenau and Hans Zinnser (Harvard), Dr. Lee K. Frankel (Metropolitan Life Insurance Company), Sir Charles Martin (Lister Institute, London), and Dr. Jules Bordet (Pasteur Institute, Brussels). Mr. Samuel M. Greer and Dr. Josephine N. Neal will act, respectively, as treasurer and secretary, and the committee's headquarters will be Dr. Park's office at the Bureau of Laboratories, East 16th-street, New York. Directors of research at each selected centre will be absolutely free to initiate such investigations as seem to them desirable and within the compass of their respective institutions. The results of such researches will, however, be studied and coördinated by the international committee, and will thus constitute a joint piece of work. At the Lister Institute the proposed research on poliomyelitis, for which special arrangements are being made, will be under the direction of Prof. J. C. G. Ledingham. The generosity of Mr. Milbank in making the new venture possible will be widely appreciated.

CONCOMITANT SQUINT.

In the quarter of a century that has elapsed since the publication of Claud Worth's views on squint very little has been added to our knowledge either of the causation of this condition or of the best means of treating it. Dr. Oscar Wilkinson,[1] of the Washington Eye and Ear Hospital, while fully recognising the value of Worth's work and largely quoting from his book, purports to improve upon his theory of the causation of concomitant squint. According to Worth the most important factor in the causation of concomitant squint is a congenitally defective fusion faculty. Wilkinson suggests that the weak point in this theory is that most cases of concomitant squint develop in children after they are 3 years old and have enjoyed binocular vision for two or three years. It is not so much a defect in the fusion faculty, he believes, as it is a disturbance or want of harmony in the proper uniting or coördinating of the several stimuli or retinal reflexes sent in to the centres for convergence. "The eyes are straight for three or four years and then cross. Why does fusion break down after three or four years' use?" he asks. It seems to us that this criticism of Worth's theory is hardly justified if the theory as expounded by its originator is carefully studied. The fusion faculty, according to Worth, is by no means identical with the faculty of binocular vision. The conjugation of the eyes for horizontal movement (intended to subserve the function of binocular vision) is perfected within the first few months of life. On the other hand, the power of completely fusing the two images is only gradually acquired and in the normal child is only perfected about the sixth year of his life. In the interval the coördination of the two eyes is, as it were, in a state of unstable equilibrium and may be upset by a variety of causes or a combination of causes, hereditary influence being often a marked feature. In some cases uncorrected hypermetropia is an important factor in upsetting the nervous mechanism (Donders's theory). In many cases the onset of squint occurs after whooping-cough or measles or after a severe fright which may be enough to influence this mechanism adversely in the absence of a fully developed fusion faculty. When once, however, this faculty is attained it is by itself sufficient to ensure against squint. We note that Dr. Wilkinson lays great stress on the accurate and periodical measurement of the angle of a squint. If, he says, at any age the degree of squint is not decreased after four to six months of careful attention, it becomes a case for operation. Accurate measurements for both far and near are diagnostic as to cause (anomaly of convergence or of divergence) and in operative cases determine largely the procedure to be followed. When operation is not performed Dr. Wilkinson stresses the need for constitutional treatment. "It must be admitted," he says, "that the general physical condition of the squinting child is usually far below par, and I can scarcely recall a case of squint in whom the general nervous system was even up to a low normal." The recommendations for training the fusion sense and binocular vision are largely taken from Worth with amplifications.

His views on operative treatment deserve close attention. After quoting the very divergent opinions of various authorities on the best age for operating on squint, he gives his opinion that when treatment with atropine and glasses do not markedly reduce the degree of squint within the first month they do not do so subsequently, even though they be used for years. Any child, he says, at or above the age of 5 years who is cross-eyed is a neglected child and should be relieved of its deformity. In this he differs from Worth and most authorities, who only operate early in those cases where there is a good prospect of establishing binocular vision. In those cases where the capacity for developing the fusion sense is proved to be absent, Worth prefers to wait until the child is old enough to be operated on under a local anæsthetic before correcting the deformity. As to simple tenotomy, Wilkinson agrees with all modern operators in condemning it as a routine procedure. An internal tenotomy is never justifiable in a patient under 12 years of age on account of the uncertainty of its result and the possibility of the later development of secondary divergence. He devotes much attention to advancement and resection operations, and describes his own procedure in detail. It differs from that ordinarily practised in several respects. In the first place, he attaches the cut end of the muscle tendon not to the sclera itself but to the cut scleral end of the tendon, and he therefore gets his effect not by an advancing of the place of attachment to the sclera but entirely by a shortening of the tendon. The amount of this shortening he regulates by a graduated rule by means of which he can accurately measure the length of tendon to be cut off. He recognises that the uncertainty of the amount of pull which will be exercised by the opposing muscle is liable to interfere with the result of this accurate measurement, but to counteract this he has devised a scale to test the power of the opposing muscle, and he employs what he calls a brace, the purpose of which is to put it out of action during the period of healing. With these methods of exactitude he claims to have secured good results in many hundreds of cases.

[1] Strabismus: its Etiology and Treatment. By Oscar Wilkinson, A.M., M.D., D.Sc., Surgeon-in-Chief of Washington Eye and Ear Hospital. London: Henry Kimpton. 1928. Illustrated. Pp. 240. 42s.

INNATE RESISTANCE TO TUBERCULOSIS.

Dr. C. T. Ryder, writing in the *American Review of Tuberculosis* for February, gives it as his opinion that acquired immunity plays but a small part in determining resistance to tuberculous infection which he believes to depend chiefly upon a natural innate or hereditary immunity. The tubercle bacillus, he points out, is a universal virus and most children are infected in early life. If such an infection were followed by an acquired immunity he would expect to find a high death-rate in the period of first infection, followed by a low death-rate thereafter. Thus the mortality curve for tuberculosis would resemble those of whooping-cough and measles, whereas the death-rate for the former

relatively low during the period of primary complexes and high throughout the periods in which a measure of "immunity" is supposed to have been established. The curve of the tuberculosis death-rate more closely resembles those of influenza and pneumonia, diseases which confer only a transient immunity. The high death-rate from tuberculosis in the first two years of life is attributable, Dr. Ryder considers, to an infant's "almost marsupial" dependence upon, and contact with, infectious adults. In general, he says, children of Anglo-Saxon origin have a high resistance to first infection, but tuberculosis is not one of the diseases in which infection is followed by an effective increase in resistance or security against death from the same disease in later life. The relative immunity of civilised races to the more fatal forms of tuberculosis as contrasted with savage races recently brought in contact with infection is explained by "the simple evolutionary formula of survival." A race long exposed to a disease has a much higher innate resistance to it than a race newly exposed. Dr. Ryder maintains that a first infection, even though successfully resisted, sensitises more than it protects. If a secondary infection occurs, the sensitised tissues tend to slough rapidly, and such sloughing leads to dissemination of the bacillus, especially if the lungs are affected.

MEDICAL MOVIES.

THE bulk of the subjects which are displayed by means of the cinematograph are at the best purely frivolous and at the worst degrading. But we must frankly recognise that it is only the widespread popularity of these types of demonstration that have led to the technical improvements in apparatus and methods which now make it possible to explore many problems in the medical sciences with unrivalled precision. The development of the compound microscope similarly owes a great deal to ingenious men who were more interested in seeing curious and astonishing spectacles than in the progress of natural knowledge, and Dr. R. G. Canti, whose achievements in cellular cinematography will be familiar to many of our readers, may owe more than he may suspect to Mary Pickford. We may see plainly what the movies can do for physiology if we reflect what a lot of trouble they would have saved Harvey in making out the heart beat and if we look at Marey's attempts to explain in detail how a man walks and runs with the rudimentary successive photographs which were available for him 50 years ago. It is obvious that the method is unique in enabling us to obtain a permanent record of a series of rapidly succeeding events which we may afterwards study at leisure either in sequence as individual pictures; and conversely, in demonstrating the sequence of movements and changes which extend over hours by speeding them through their stages in quick time. We can get knowledge through the cinematograph which we can get in no other way. Whether the method has any further legitimate applications in medicine is a question on which there has been some difference of opinion and practice. It is neither an excess of puritanism nor extravagant conservatism to condemn wholeheartedly the taking of films of technical medical procedures—operations, examinations, and the like—and their exhibition to lay audiences; the practice is simply indecent. And there is, and is bound to be, some doubt as to how far films should be used in educating medical students. Employed in moderation and with discretion, they can fill up some of the gaps in realism which are left by the current methods of didactic and practical instruction. But their association with picture houses makes it more necessary than ever that any miraculous and extravagant elements should be most carefully avoided; as things are, it is one of the besetting sins of the student to pay more attention to the strange and bizarre than to getting a proper understanding of the ordinary and commonplace. Those who use them or contemplate using them might also do well to reflect at length on that fine saying of Bishop Hall which should be carved over the entrance of every medical school: "God sells knowledge for sweat." For the information and instruction of medical men of more mature experience, films no doubt have a definite value of rather limited range and at the present time the most profitable field for their employment seems to be in public health propaganda among the laity. No one who saw the queues of sober men and women waiting recently to get into the venereal disease show at the lower end of Tottenham Court-road [1] or who heard accounts of what they had seen there can doubt that on the whole such exhibitions make for the advancement of good health and the promotion of good morals. Their preparation needs much care and thought. Primarily they must represent the literal truth, and though they must necessarily emphasise the points they want to make they must be purged of the miraculous and extravagant; no one is quicker to detect an unreal exaggeration of technical matter than an audience of lay people. The precise mode of presentation must be left to experience and the experts. Few films of which healthiness is the main topic can possibly run for two or three hours; medical matters might appear as subsidiary sections much in the same way as the topical pictures of current events or perhaps better still as bye points in an ordinary tale; Charlie Chaplin could do as much with "drink more milk" as with any other slogan.

TERMINAL DISINFECTION.

SLOWLY but surely a conviction is growing among medical officers of health and general physicians that the traditional methods of disinfection require revision. The early discoveries in bacteriology were the foundation of a general belief in the survival of disease germs on fomites, and the attempt to disinfect places and inanimate objects which have been in contact with patients has been one of the chief preoccupations and channels of expenditure of public health authorities all over the world. The reaction against this indiscriminate and costly industry has been fostered by new discoveries in epidemiological and bacteriological research, and perhaps even more by a realisation that the risk of contamination of surgical wounds by any object not brought directly within the field of operation is negligible. The most notable contribution to the subject within recent years is undoubtedly the monograph "On the Practice of Terminal Disinfection," published by Prof. C. Chagas, Director-General of Public Hygiene of Brazil, in the *Bulletin Mensuel d'Hygiène Publique*, for May, 1926. This paper, on which we commented a year ago,[2] translated into English, is now published as a separate pamphlet,[3] and should be read by every medical man who is in any way connected with the struggle against infectious illness.

Prof. Chagas's theme is that terminal disinfection, as practised in most countries, "is a procedure erroneously founded, almost always useless, and whose practical results bear no adequate relation to the labour and the cost involved." His main objection to it is the impossibility of finding the germs which it is desired to kill, and the consequent necessity of blindly and wastefully disinfecting the whole of the premises under suspicion. The solutions leave untouched numberless crannies in which germs may survive. Experiments, of which he quotes Flügge's, have shown that cleansing operations far more rigorous than are ever used in ordinary practice cannot destroy all the organisms in cultures placed on walls and floors, and that ordinary antiseptics require an enormously longer time to act effectively on infective material than they are ever allowed. Fumigation has been described by Dr. Andrew Balfour on unimpeachable evidence as "undoubtedly a process of camouflage." To modify the current methods by increasing the strength or prolonging

[1] See annotation in THE LANCET, Feb. 4th, p. 247.
[2] THE LANCET, 1926, ii., 610.
[3] William Hodge and Co., Ltd., Glasgow. 1928. Pp. 45. 2*s*. 6*d*.

the application of the disinfectants would be impracticable on many grounds. The testimony in favour of these arguments is so strong that few well-informed persons will venture to doubt them. But, as Dr. Chagas points out, the real objection is not so much in the technical uselessness of terminal disinfection as in the fact that it is terminal at all. The channels by which infection is disseminated are not the surroundings of the patient, but his excreta, including sputum. By the time the sanitary corps arrives the harm has been done; outside persons have been infected, and a large proportion of them have commenced a busy and destructive career as carriers.

Finally, the part that terminal disinfection plays in allaying public anxiety unjustifiably is almost as deleterious as any of its other evils. The knowledge that a ritual which will clear up all trace of the disease is to be performed at its end undoubtedly leads to the neglect of just those simple precautions which, taken during the course of the illness, would do away with even the hypothetical need for terminal disinfection. Given efficient "current disinfection"—i.e., the sterilisation of all articles soiled by the patient's excreta and the prompt disposal of the excreta themselves—very little remains to be done. The kind of terminal disinfection recommended by Prof. Chagas consists of the cleansing, by ordinary physical or chemical means, of articles that have been in direct and recent contact with the patient; the disinfection of obviously contaminated objects; the vigorous use of soap and water, and the liberal application to the sick-room of sun and fresh air. Even this is largely superfluous, he says, when current disinfection has been properly carried out, and he goes on to prove the uselessness of terminal disinfection for each of the common epidemic diseases separately.

MOSQUITO-PROOFING IN INDIA.

IT only needs a rough computation to indicate what is the loss to the Army in India from insect bites. In 1926 sickness in hospital accounted for 660,000 working days or an average of 11½ days per man. Of these admissions a quarter were for venereal disease, a twelfth for injuries. Of the remaining two-thirds a quarter, (say) 110,000 days, were attributed to the attacks of biting insects—mosquitoes carrying dengue and malaria, sandflies with their own special infection, and others (culicidæ, for example) to which the Army Health Report for that year ascribes "much of the inflammation of areolar tissue." It may therefore be said without exaggeration that 20 per cent. or more of all the illnesses that come to attack our soldiers in India can in peace-time be prevented if we effectively protect them from the assaults of insects. and it is this realisation no doubt which is reflected in the increasing interest taken in mosquito-proofing of barracks and hospitals.[1] If all openings are covered carefully by an expert with copper gauze, this affords complete protection against insects of all kinds—flying beetles, and culicidæ as well as anopheles; the rooms are cooler, and as mosquito nets are unnecessary the men get more good of the punkahs and sleep better. The method is not novel; mosquito-proofing of houses is an old and well-known story in the Roman Campagna, and at Panama; it was the final act in the extinction of malaria during the late war in the large rest camp at Taranto in the hands of the late Colonel J. C. Robertson, I.M.S.[2] Hygiene makes slower progress perhaps in India than elsewhere, but in 1925–26 mosquito-proofing was tried at Lahore, the most highly malarious of all the large stations, with results as striking as could be wished. From August to October, 1926 (the malarial season) 500 men in unprotected barracks had a hospital admission-rate for malaria of 47 per 100, while 300 men in mosquito-proofed barracks had a rate of only 18 per 100, or a saving of 89 cases. Taking the average stay in hospital of malaria cases at 8·8 days, this means some 800 days of illness avoided, disregarding unrecorded periods of light duty and convalescence. Added to the general knowledge we have of malarial prophylaxis elsewhere these figures appear to be decisive, and would justify the instalment of screen protection all over India beginning with stations of high malarial incidence (say) over 150 per 1000. If it be contended that the cost is high, so also is the cost to the State of the British soldier in India, and this cost is rising while the medical service is diminishing. The rubber growers of Malaya have found that sanitation pays and Sir Malcolm Watson has told us that the £4 per coolie spent on malaria prevention has had an immediate return. The United States spent £20 to £700 per sq. mile in the war on the protection of their home camps against malaria. In Palestine the Army spent 12*s*. per man (£40,000 in all) on malaria protection of the troops to prevent Lord Allenby's forces from melting away before his break-through. What value, it may well be asked, have the 800 working days saved to 300 men of the garrison of Lahore by mosquito-proofing? Nor does the benefit end there, for we have to take into account also the fewer carriers of gametes in barracks to infect later broods of anopheles, and so in their turn other human victims. The 90 cases saved would have each required at least an ounce of quinine, a total saving of some £9 among 300 soldiers. And in 1926 there were in India 56,000 soldiers not counting officers and their families.

[1] See articles by A. C. Munro, Jour. of the R.A.M.C., October, 1927, p. 248; N. J. C. Rutherford, ibid., January, 1928, p. 76, and April, 1928, p. 316; J. E. M. Boyd, ibid., April, 1928, p. 287.

[2] THE LANCET, 1920, ii., 30.

CIRRHOSIS OF THE LIVER.

MODERN pathology would assume, in the absence of very definite evidence to the contrary, that the increase of fibrous tissue in ordinary portal cirrhosis is a replacement fibrosis—that is, that the growth of connective tissue is not the primary change, but follows a destruction of the parenchyma of the liver. The difficulty of this view has been that degeneration limited to the peripheral parts of the lobules is very seldom seen in human post-mortem material; it turns up now and again, but cannot be associated with any particular precedents except possibly pneumococcal peritonitis. Most of the poisons which affect the liver destroy the central zone of the lobule (e.g., phosphorus, chloroform, deficiency of oxygen, jaundice), and the bacterial focal necroses (e.g., typhoid fever) are scattered irregularly without any definite zonal distribution. Prof. F. B, Mallory has endeavoured in recent years to connect chronic copper poisoning with liver cirrhosis, and it is just possible that the recent decline in the frequency of the disease is due as much to giving up copper cooking vessels as to moderation in alcohol. But experiments with manganese have given more suggestive results. Dr. G. M. Findlay showed that manganese caused hepatic cirrhosis in rabbits, guinea-pigs, and rats, and his experiments have now been confirmed and elaborated by Drs. E. W. and P. E. Hurst.[2] It is quite clear from their results that manganese salts give the necrosis required on a priori grounds, which is limited to the peripheral of the lobules, and that this is followed by a reparative fibrosis which ultimately gives a condition quite like human cirrhosis. Control experiments with chloroform and phenylhydrazine, which cause necrosis of the central zone of the lobule, very rarely showed any cirrhosis. The interesting observation is also recorded that the cirrhosing effects of manganese are greatly enhanced by repeated intravenous injections of living *colon bacilli*, recalling Adami's work on the relation of chronic bacterial infection to the disease. Whether manganese can reasonably be implicated as a cause of human cirrhosis is uncertain. Industrial manganese poisoning gives rise to nervous symptoms resembling paralysis agitans and to emotional disturbances; experience at autopsy is inadequate to show whether

[1] Brit. Jour. Exp. Path., 1924, v., 92.

[2] Jour. of Path. and Bact., 1928, xxxi., 306.

he hepatic cirrhosis which has been found once is requent or usual. It is a widely distributed element nd few samples of the surface of the earth and the hings which are on it will fail to show some evidence f its presence. There is, however, very little in the issues of birds and mammals (though they must often ake in considerable quantities in their food) or in uickly growing plants such as cabbages or cereals; omestically there is no particular and general use for he metal or its salts and even permanganate as a isinfectant is rarer than it used to be. It is difficult o see how man would in these ways come into intimate ontact with any but traces of manganese. On the ther hand, it accumulates to a remarkable degree in he leaves of some trees and in some invertebrates, otably slugs and mussels, and it seems to be worth hile to analyse some of the bypaths of human food, specially the tasty additaments which are supposed to imulate an appetite in the chronic gastritis of lcoholism.

THE COLOUR OF THE SKIN.

In connexion with phototherapy a good deal of ork has been done on the absorption of ultra-violet ght by the skin, but the general question of the eflecting and absorbing powers of the skin for light f different colours has received little attention. Not uch has been found out about the differences in is respect between the skins of different races, and paper on this subject by Mr. J. H. Shaxby, D.Sc., and r. H. E. Bonnell in the April issue of *Man* forms an portant contribution to the literature. They used photometric method in which the skin is illuminated d the amount of light which it reflects is compared ith the amount reflected by a standard matt white rface of the same area. Successive observations ere made with white, red, and green light, first with given area of skin and then with the standard matt hite surface. The ratio of the various readings btained with a given colour gives the reflecting wer, or the reflection-coefficient, of the skin for this lour. The reflecting power of human skin was easured for about 270 subjects, European and gro, the Europeans being mostly Welsh or English. addition reflection-coefficients were found for fferent parts of the body. It was found that when hite light is used the parts of the body arranged in der of increasing power of reflection are, for uropeans, the palm, back of the hand, forehead, eek, outer side of the arm, and inner side of the m. For negroes the corresponding order is the back the hand, forehead, outer side of the arm, cheek, ner side of the arm, and palm. The ratio of the flection-coefficients of negro to European skin are ughly 60 per cent. for the palm and 30 to 40 per cent. the other regions examined. The variations with een light run almost parallel to those found with hite light. For red light the tendency seems to be the fairer subjects to show relatively less reflecting wer—that is, the swarthier skin is also slightly the lder skin. Relative ruddiness of tint is measured the ratio of the red to the green light coefficient and termed "red-green ratio." Records of reflection the cheek show that a negro may be ruddy or llid within about the same limits as a European. . Shaxby and Mr. Bonnell conclude from their periments that there seems to be no essential ference in type between the reflection of white and oured skins, negroes in this respect differing from ropeans only in the amount of melanin pigment in e skin.

As we have already announced, a conference rheumatic diseases will be held at Bath on y 11th and 12th under the presidency of Sir George wman. The three sections will be devoted to cial Aspects, Causation, and Treatment, and a ge number of papers will be read concerning the ute rheumatism of childhood and also the various ms of arthritis and fibrositis affecting older patients. dical questions in connexion with the conference uld be referred to the hon. medical secretary, Dr. Vincent Coates, at 10, The Circus, Bath, whilst copies of the full and interesting programme may be had from the hon. organising secretary, Mr. John Hatton, at the Pump Room, who will also make arrangements for railway vouchers and hotel accommodation.

THE Croonian Lecture of the Royal Society will be delivered at Burlington House, on Thursday, May 10th, at 4.30 P.M., by Prof. Ivan Pavlov, of Petrograd. The subject will be Some Problems of the Physiology of the Cerebral Hemispheres. Prof. Pavlov, who is a Foreign Member of the Society, paid his last visit to this country in the summer of 1923, shortly before the publication of his classical treatise on conditioned reflexes.

THE death is announced of Dr. Reginald Spencer Pearson at the age of 62. Dr. Pearson was Mayor of Lambeth last year.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXIV.—TREATMENT OF RICKETS.

I.—PROPHYLACTIC MEASURES.

THE prevalence of rickets in London and probably throughout Great Britain has been greatly diminished during the last few years, but the present position cannot be regarded with complacency. The means for eliminating all but the slightest manifestations of this disease are readily available, yet efficient prophylaxis is very often omitted even when infants are under medical supervision. The following figures show the wide prevalence of rickets of a grade which is radiographically recognisable—the true incidence would be higher than the figures suggest as changes may be present in the bones of the head and the thorax before they are apparent at the wrist. Of 167 unselected infants of from 1 week to 2 years old seen in the out-patient department of the Queen's Hospital for Children in April, 1925, 8 per cent. had radiographic evidence of rickets, the percentage rising to 15 if only those aged from 4 to 13 months are included. This series did not include cases sent to hospital for rickets, and the disease appears to be much commoner in many parts of the British Isles than it is in London.

Diagnosis.

The basis of diagnosis differs widely, but since more efficient treatment is closely connected with better diagnosis I would suggest that, where radiographic and chemical findings are not available, diagnosis should be based only on clinical evidence of *changes in the bones* and not upon head-sweating, pallor, late dentition, flabby muscles, pot-belly, or an excessive deposition of fat, all of which are often found in non-rachitic infants.

The early bone changes require careful and systematic examination for their discovery. Among the most useful are: craniotabes, enlarged rosary, and enlarged epiphyses. During the second six months of life an enlarged rosary is probably the most valuable early sign, but in an infant aged 4 to 7 months craniotabes, developing behind the ears, is often one of the earliest signs, and craniotabes is the only conclusive clinical sign of *active* rickets which we possess. As soon as the process of "healing" begins—i.e., as soon as normal calcium deposition is re-established—calcification of the soft areas in the skull is increased, and craniotabes has usually completely disappeared within four weeks of the beginning of efficient treatment. Craniotabes, however, is rarely found in London after 9 to 10 months of age, and, in its absence, although a guess may be made as to whether the disease is active, healing, or healed—from such factors

as the child's age, duration of treatment or season—yet the precise stage of the disease can only be accurately determined by one or more X ray photographs or by chemical examination of the blood.

Prophylaxis.

In considering prophylaxis one must constantly bear in mind the cause of the disease, and its seasonal and age incidence. In London it is comparatively rare to find cases of active rickets in the late summer. The disease develops during the winter, probably reaches its maximum incidence in April, and the great majority of cases heal in the course of the summer, though they may relapse in the following winter. In artificially fed children not receiving specific antirachitic treatment, *the deciding factor in the development of rickets is usually the amount of exposure to light, and this is determined primarily by season and by the amount of time the infant spends out of doors.* Some breast-fed infants, who have little outdoor life, also develop rickets. It must be remembered that both human milk and cow's milk are relatively poor sources of vitamin D (the antirachitic vitamin) and throughout the winter every artificially fed infant and those breast-fed infants who may not get sufficient outdoor life daily should receive special preventive treatment. During the summer, if the child is out daily, special treatment is generally unnecessary. In the latitude of Toronto it has been found that in April and May the sun's rays have about eight times the antirachitic value that they have in December, January, and February, and it is from the autumn until April that specific prophylaxis is required as a routine measure.

The great majority of cases of rickets begin during the first year of life, probably most often between 4 and 10 months of age, and consequently it is for children during the first year that prophylaxis is particularly needed, though it is desirable to give such special treatment during the winter to "toddlers" also. Since premature babies are specially liable to rickets, which frequently develops before 5 months of age, special treatment should whenever possible be given to these infants from 1 month old whether they are breast-fed or bottle-fed, and usually in summer as well as in winter. The susceptibility to rickets of Italian and of negro babies in this country and the United States has often been noted, and specific treatment throughout the year is advisable for infants whose forbears lived in more sunny latitudes than our own.

General measures of prophylaxis are: (1) The procuring by all possible means of adequate outdoor life daily for infants throughout the year, and not only in fine weather; and the exposure of the child, so far as possible, to what sunlight is available. The mother should be persuaded to keep the child out of doors daily during the hours of light, and whenever possible with the hood of the perambulator down. (2) The encouragement of breast feeding. (3) The inclusion in the ordinary diet of infants and children not on the breast of an adequate amount for their age of those foodstuffs containing vitamin D—e.g., milk, eggs, and meat.

Specific treatment may be given either by supplying a substance rich in vitamin D by mouth—e.g., in the form of cod-liver oil—or by exposing the child to an artificial source of ultra-violet light and so bringing about the formation of vitamin D in the body. In either case the action of vitamin D appears to be identical, and to supply it by mouth is simpler and more economical in time and money. There are, of course, a very small proportion of infants—e.g., premature infants with poor digestive power—to whom it may be possible to give light therapy when cod-liver oil cannot be tolerated. The question arises whether artificial light therapy has any beneficial effect on the general health, other than that due to its power of forming vitamin D in the skin, which renders it more desirable than cod-liver oil as a routine prophylactic measure for infants. I have been unable to demonstrate any significant difference in rate of growth, hæmoglobin content of the blood, or liability to intercurrent illness between a group of infants getting light therapy as well as cod-liver oil and another group treated with cod-liver oil alone. I therefore consider that in the present state of our knowledge administration of cod-liver oil should be the routine method of prophylaxis. No method has been shown to prevent completely all manifestations of rickets in every case, but with proper cod-liver oil treatment, though slight craniotabes or costochondral enlargement may appear, changes of a grade radiographically recognisable are, in my experience, banished.

The antirachitic value of different specimens of cod-liver oil varies widely, but half a drachm of a 50 per cent. emulsion of most oils given three times daily is an adequate dose. To bottle-fed babies it is best given in the feed. Nearly all infants from the first weeks of life will tolerate it satisfactorily if the emulsion is started a few drops at a time, and increased to half a drachm three times daily within 4 to 14 days. Large doses may cause digestive disturbances and do not appear to have any compensating advantage. After infancy many children prefer the taste of cod-liver oil and malt, half a drachm of a good preparation three times daily being generally adequate for children over 12 months.

Certain concentrated forms of vitamin D are now on the market—both extracts of cod-liver oil, and also ergosterol activated by irradiation. It is probable that in the future some such preparation will have a wide field of usefulness, but the correct dosage and the keeping properties of these preparations need careful investigation before they are used on a wide scale. An effective curative dose of irradiated ergosterol mentioned in the last report of the Medical Research Council is apparently equivalent in vitamin D content to nearly half a litre of cod-liver oil daily. Surely we need to be very certain that over-dosage has no ill-effects on children before such preparations are widely used. Moreover, if the keeping property of some of these preparations proves to be poor, one may be quite unaware whether one is using an extremely potent or a totally ineffectual drug. It seems to me far preferable to use cod-liver oil of a good brand rather than proprietary preparations of unknown vitamin-D content. The use of ineffectual substitutes is certainly responsible for the development of many cases of rickets. Many manufacturers are now taking advantage of the facilities offered by the laboratories of the Pharmaceutical Society of Great Britain, where tests as to vitamin content can be performed, and it is possible that in the near future dosage will be on a proper quantitative basis.

Summary.

General prophylaxis is best attained by as much outdoor life as possible throughout the year.

Cod-liver oil emulsion, or cod-liver oil and malt for older children, is advocated for routine specific prophylaxis. They should be begun gradually. Proprietary preparations of unknown antirachitic value should be avoided.

Specific prophylactic treatment should be given to—

(*a*) All artificially fed infants throughout the winter, and throughout the year if sufficient outdoor life cannot be ensured.

(*b*) Breast-fed infants who are little out of doors.

(*c*) All premature infants throughout the year.

(*d*) All infants of dark-skinned races living in this country—throughout the year.

HELEN M. M. MACKAY, M.D., M.R.C.P. Lond.,
Physician to the Queen's Hospital for Children.

MOORFIELDS EYE HOSPITAL.—The annual report of the Royal London Ophthalmic Hospital records the inauguration of a properly equipped ultra-violet ray department which has already "more than fulfilled expectations," 206 patients having made 3765 attendances in little more than ten months. The committee of management contemplate increasing the general ward accommodation from 120 to 130 beds, providing rooms for 21 nurses, and 15 private rooms for paying patients. These extensions will cost £28,000.

Special Articles.

THROUGH YUGOSLAVIA.

A visit was made during three strenuous weeks of April by a party of English men and women interested n Yugoslavia, its racial make-up, its chances of ıational development, its scenery and amenities, and, or the medical members of the party especially, the neasures taken by the new kingdom to promote ublic health. A note upon this aspect of the tour vill be of interest to the profession.

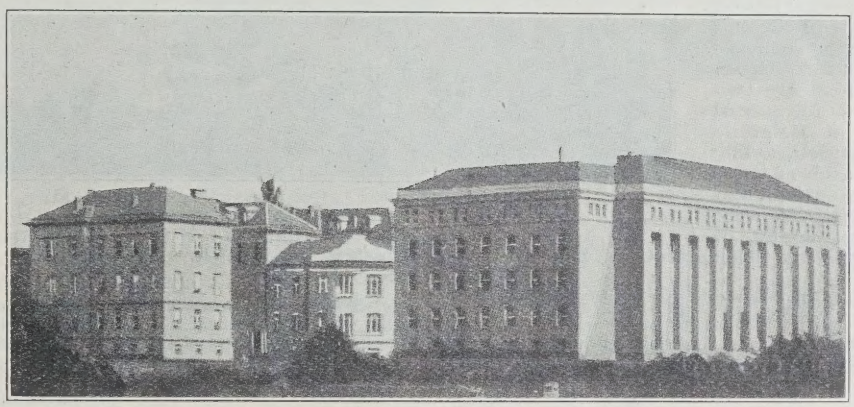
The Territory of the South Slavs.

Not everyone is quite clear as to the significance of he title Yugoslavia, a title which it may be said is tself a sort of compromise, offending no one, whereas he adoption, for the combination, of the name of ny one of the constituent races might have been nfortunate. The title means the South Slavs, and heir country onsists of our princi- al divisions. irst there re the Slov- nes, the old lav race, ith its apital at jubljana, hich has een for long close asso- ation with ıe Austrian mpire, ıaring its ltural de- elopment ıditscatho- religion. econdly we ave the roats, rep- sentatives of the ancient and once powerful Slav ngdom whose crown was joined to that of Hungary 1901; the capital is at Zagreb[1] (previously nown as Agram) and the large Croat territory resents great differences of development in civil- ation. Roughly speaking the north, having me strongly under Austrian influence, is com- aratively advanced, while the south bears the haracter of a poor agricultural race, struggling in any places with unpromising soil, despite its tracts fertility and still retaining many traces of Ottoman le. East and south of Croatia we have Serbia, far the largest Slav race contributing to the new nalgamation, a fact which has produced the difficulty patriotic breasts of distinguishing between a n-Slavia and a pan-Serbia. The Serbs as a whole e not so cultured as the Slovenes and northern oats, but their development under the racial dependence ensured to them by the establishment of e kingdom of Serbia with its capital at Belgrade has en freer. Bordered on the north by Austria and the east by Roumania and Bulgaria, while faced the west by the Adriatic shore of Italy, the ographical position of Serbia brought about its litical circumstances and made of the Serbians a eat race of soldiers. Below Serbia proper come the ovinces of Bosnia and Herzegovina, where the rk ruled for nearly five centuries until Austria inter- ned in her much criticised manner; here we have ded to the complications produced by the existence both the Roman Catholic and the Orthodox or Greek church a large proportion of Mahometans. Finally, along the south-west of the new kingdom runs the narrow strip of Dalmatia with its rocky coast and valuable harbours, below which lies little Montenegro separated from Greece by Albania.

For the ethnological student, therefore, a curious field of investigation is displayed. For the various Slav races, possessing and practising four religions—inasmuch as to the Catholic, the Orthodox, and the Mahometan, we must add in many districts a large proportion of Jews—inhabit territories which vary from the most fertile meadows to the most sterile rocks, and inherit ideals of political and social life which are allied on the one side to those of an ancient and cultivated European court and on the other side to the rudimentary schemes of existence satisfactory only to the most backward peoples.

Such in outline is the new kingdom which those who direct the fortunes of Yugoslavia are seeking to weld, as best they may, into a symmetrical and homogeneous entity, so that it may play its part as a nation among other nations. Neither history nor geography pretends to be other than the briefest summary, useful for understanding some of the main conditions of life in Yugoslavia as a whole. And once again medicine, preventive and curative, is proving itself the grand direction in which efforts can be made for the benefit of all, whatever their religion, their history, or their environment. The diseases will vary in such varying circumstances as those of Yugoslavia, but the desire to be protected or relieved is common, and indicates a prime direction in which the Government can advance the interest of its dependents.

Fig. 1.



The Institute of Hygiene and School of Sanitation, Zagreb.

Health Organisation in Yugoslavia.

The organisation of the public health services in the Kingdom of the Serbs, Croats, and Slovenes has been well described in a publication of the League of Nations by Dr. A. Štampar, head of the Health Section of the Ministry of Public Health at Belgrade. The monograph was reviewed in our columns on its appearance alongside of the similar memoranda emanating from other States, so that it is possible that the general design in Yugoslavia is familiar to some of our readers. Since the kingdom was proclaimed—namely, at the end of 1918—a Ministry of Public Health has been created, and to this bureau there was soon added a Ministry having the care of social institutions. When two years later the real constitution of the country came into being, the Government was placed in the possession of legislation dealing with public health in a general manner, taking the supervision of labour and the improvement of general and social hygiene upon its own shoulders, and recognising special responsibilities in such vital matters as the assistance of motherhood and childhood, the material care of workers in illness or disablement, the provision of free medical attention for the poor, and the investigation of the causes of disease. All these duties are assumed, and are being carried out, by the Government with as much activity

[1] Cities in Yugoslavia often possess two names, that which y bore under Austro-Hungarian rule and the older name to ich they desire to revert.

as possible in a land where practical measures must often be attended with difficulty, owing to deficient intercommunication, diversity of religions, and widespread illiteracy.

The duties of the Ministry of Public Health may be summarised as follows: To promote the regular increase of the population by encouraging parenthood and healthy childhood; to protect public health by the establishment of institutions for the treatment of disease and for the study of its prevention; to supervise the health of the nation by watching the incidence of disease; and to educate the people in health matters. As a first weapon in the contest, the kingdom possesses three faculties of medicine, one at Zagreb, one at Belgrade, and one at Ljubljana, the last being of recent formation. Through these faculties special health staffs can be trained and there are training colleges for nurses allied to them, while behind them are two great institutes for social medicine—one at Belgrade and one at Zagreb. The programme at each of these institutions is identical, and the English visitors were given the opportunity of thoroughly inspecting the institute at Zagreb.

The Institute of Hygiene and School of Sanitation at Zagreb. (Fig. 1.)

The School may be said to owe its origin to the veteran Prof. Milan Yovanovich Batut, who preached at ancient Agram the doctrines of public health throughout his long life, and who lived to see many of his ideals realised in the Zagreb Institute. The School was erected with the aid of the Rockefeller Foundation and is combined with the National Bureau of Hygiene at Zagreb into one Institution. Its functions, according to statutory regulations, are much what might be expected from the list of responsibilities, detailed above, which are undertaken by the Ministry of Health. The specified duties are as follows:—

(*a*) To help all persons wishing to get acquainted with problems of public health, in receiving a special education, by founding of libraries and museums, by arranging for lectures and suitable courses, by publishing books and pamphlets, and through any other suitable means.

(*b*) To organise special courses for various professions where education and instruction may be imparted in all branches of public health.

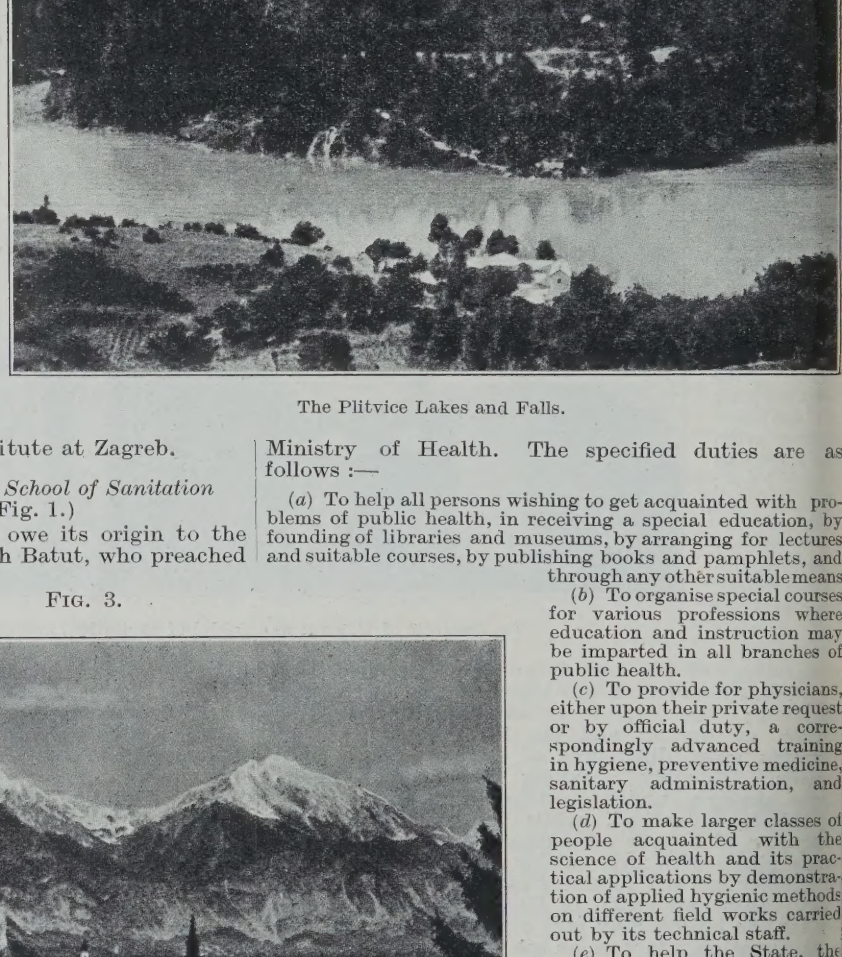
(*c*) To provide for physicians, either upon their private request or by official duty, a correspondingly advanced training in hygiene, preventive medicine, sanitary administration, and legislation.

(*d*) To make larger classes of people acquainted with the science of health and its practical applications by demonstration of applied hygienic methods on different field works carried out by its technical staff.

(*e*) To help the State, the self-governing public bodies and private institutions as well as individuals in their efforts to carry out all projects bearing upon the improvement of public health in a more reasonable and efficient way, by giving expert opinions and instructions, and by elaborating projects in all questions pertaining to public health.

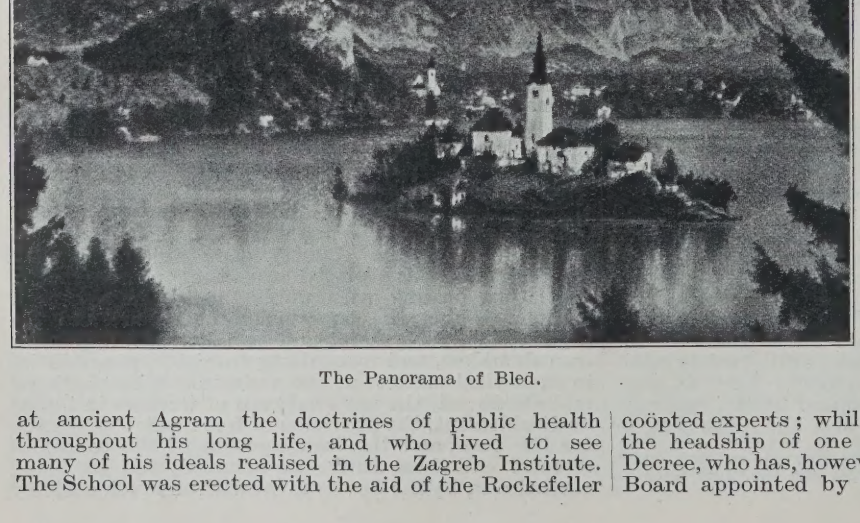
Further, the School issues certificates of attendance upon lectures given by approved teachers, being either professors at the Institute or the University, or coöpted experts; while the whole organisation is under the headship of one Director, appointed by Royal Decree, who has, however, the assistance of an Advisory Board appointed by the Minister of Public Health.

FIG. 2.



The Plitvice Lakes and Falls.

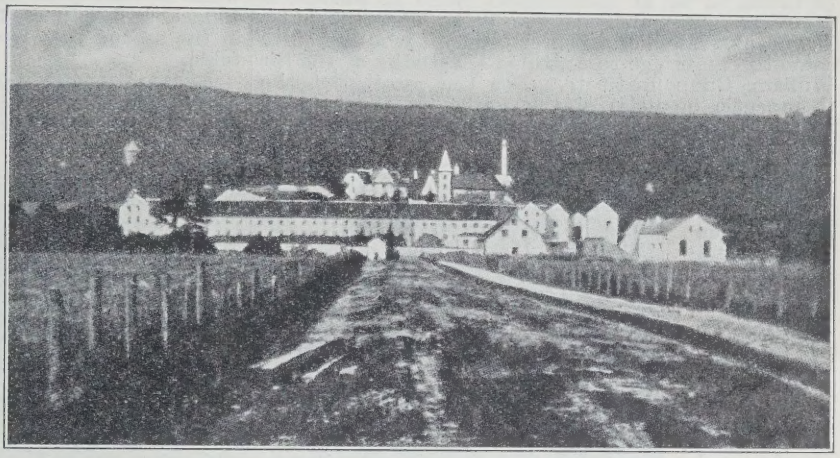
FIG. 3.



The Panorama of Bled.

This Board consists of some 30 persons representing the views and claims not only of all Government educational and civic bodies, but also the Red Cross Association and the Yugoslav press; but as the Board holds only two ordinary meetings yearly it is clear that the Director can act in most cases independently. He has, however, to consult the Board in respect of his budget and his choice of staff, while he can submit any question to them, and they can at any time make suggestions to him as to policy. It is well that finance comes under the inspection of this widely representative body, for the sources of income of the Institution are many and consequently many are directly interested in learning how the funds are spent. Not only does the State make a grant, while public bodies and many associations and individuals subscribe, but the School itself makes collections for special purposes, and fees for tuition and admission to lectures and laboratories have to be accounted for, as well as the sales of laboratory production.

FIG. 4.



The Trappist Monastery at Banjaluka.

The Regulations of the Institute of Hygiene.

Regulations for the Institute are as carefully thought out as those for conducting the School, and were it not for the certainty that with developing activities they are sure to become modified we should get the impression that they are too detailed. In Great Britain things are done first, as they are needed, and rules are made later for carrying on and for future expansion—sometimes as they are needed and not infrequently when they are long overdue; so the succession to an elaborate organisation, derived from more advanced countries, presents a curious picture; we feel at the same time that, while the new civilisation is starting with a great number of problems already solved, it is impossible not to apprehend that there is a risk of superficiality, the results of work done elsewhere being accepted without any period of personal trial. In Yugoslavia, as regards preventive medicine, this risk is being provided against by the intention to carry on fundamental work through their own men, but with close attention, especially by communication with the League of Nations, to what is being done in other countries.

The Institute of Hygiene with the School of Public Health will have the following departments eventually, and much of the work is already started: (1) administrative; (2) bacteriological-epidemiological; (3) for the preparation of biological products; (4) chemical, with the duty of controlling foodstuffs; (5) an antirabies bureau; (6) a bureau for the preparation of small-pox vaccine; (7) a hospital for contagious diseases; (8) a department of parasitology; (9) a section of rural sanitation and sanitary engineering; and lastly (10) a department of social medicine where hygienic propaganda are considered and the study is undertaken of national pathology and vital statistics.

FIG. 5.

The Market, Serajevo.

The work falling under the various sections can be coördinated by the central character of the Institute, and, where it is proceeding, is following the pattern of similar work done in this country, with the full advantages of an excellent equipment. Special attention may be called to the work in connexion with rabies, for the work proceeding in this department implies a rising prevalence of the disease. The department appeared to be busy in diagnosing the presence of rabies in suspected animals, in arranging for the immunising on the spot of persons already bitten, and in preparing and distributing the vaccine. The Fourth Epidemiological Report of the Health Section of the League of Nations gives the figures for human rabies in Yugoslavia in 1925 and 1926 as follows: 1925, 14 cases with 14 deaths; and 1926 28 cases with 25 deaths. These are the latest figures published, and at the Institute there seemed to be ground for believing that the rise in the disease was being maintained.

The evolution of spas and health resorts also comes

under the notice of the Institute. As yet not many centres have been developed and the possibilities of this sort are only now receiving attention. The visitors from this land were able to see the careful manner in which the medicinal qualities of the natural waters of Yugoslavia are being investigated as an analysis was being conducted of the mineral waters of Liphik, in a Slavonian valley, whose make-up promises to be of considerable value in rheumatic disorders. The analysis was being undertaken by Dr. Stanko Miholic, a Zagreb student, who has since come to Cambridge to continue his studies at the Sir William Dunn Institute. For the most part the therapeutic qualities of the waters of the country remain as yet undeveloped, but balneology is represented by beautiful health resorts such as Plitvice (Fig. 2) and Bled (Fig. 3).

FIG. 6.

Protestanska Crkva, Serajevo.

The Incidence of Disease in Yugoslavia.

The Kingdom of the Serbs, Croats, and Slovenes is subject to the six great infectious diseases which are found throughout Europe—namely, small-pox, typhoid, typhus, dysentery, scarlet fever, and diphtheria; here the figures available for the six years 1919–24 inclusive show that already immense improvement has followed under the efforts to meet the circumstances in a scientific manner, such as have been detailed. How thorough the attempt at notification of disease is may be judged by the fact that it is a public duty to send a telegram direct to the Ministry of Health when the presence of a serious epidemic has been verified by diagnosis supported by laboratory tests. All these six diseases must be notified to the health authorities at once, who send their reports to the Ministry on the 7th, 14th, 21st, and *last* day of every month, the fixed dates facilitating comparisons between various months.

Infectious Diseases in the Kingdom of the Serbs, Croats, and Slovenes.

Number of inhabitants 12,017,323.

Diseases.	1919.					1924.				
	Morbidity.		Mortality.		Case mortality (per cent.).	Morbidity.		Mortality.		Case mortality (per cent.).
	A.F.	Per 100,000.	A.F.	Per 100,000.		A.F.	Per 100,000.	A.F.	Per 100,000.	
Small-pox	5,278	43·4	1100	9·2	20·8	308	2·6	62	0·51	20·1
Typhoid fever	3,969	33·0	579	4·8	14·6	1051	8·8	153	1·3	14·6
Typhus ..	12,198	101·4	1499	12·5	12·3	232	1·9	14	0·12	6·8
Dysentery	17,532	141·5	3100	73·5	17·6	209	1·7	18	0·15	8·6
Scarlet fever	1,521	12·7	224	1·9	14·7	4478	37·3	908	7·6	20·3
Diphtheria	1,406	11·7	126	1·1	9·0	700	5·8	118	0·98	16·9

A.F. = Absolute figures.

Estimating the number of inhabitants at 12 million, the interesting comparison comes out that in 1919 there were over 5000 cases of small-pox and in 1923 there were 1000, and in 1919 12,000 cases of typhus, while in 1923 there were only 1000, the mortality per 100,000 falling in the first case from 9·15 to 0·51, and in the second case from 12·47 to 0·12. (See annexed table.

A large proportion of the rest of the sickness of the country is comprised as might be expected in the sufferers from malaria, tuberculosis, and venereal disease, and vigorous campaigns have been initiated in each case.

Malaria.—Yugoslavia is one of the most malarial countries in Europe. It is possible that in certain parts of the kingdom, especially in the south, from 8 to 9 per cent. of the inhabitants are actually suffering, and the number of cases and the material loss entailed have made the check of malaria one of the most anxious problems before the Government. Austria had taken some steps to check malaria before the war, especially in Dalmatia, and during the war antimalarial measures were taken in the French and British lines which have borne fruit since. In 1923 an antimalarial campaign was undertaken at various epidemiological and bacteriological stations, of which the chief one is situated at Trogir, on the Dalmatian coast and famous for its magnificent church. At these stations attempts have been made to collect in an orderly manner material information as to the distribution of malaria, while to a new institute at Skoplje will be left the central organisation of the whole work. Eventually 50 auxiliary stations will be engaged on a simultaneous campaign under the direction of specialists, the laboratory investigations necessitated being undertaken at Belgrade.

Tuberculosis.—The campaign against tuberculosis is not so far advanced, nor is the disease so rife, though its incidence amongst the Mussulman population is heavy owing to the confinement of the women and children to the harems. The considerable Jew population appears to be the least vulnerable in this respect. As might be expected, southern Serbia and Montenegro suffer principally, while Slovenia and Dalmatia, which is comprised in a western sea-coast, are the most free. A sum approximate to £75,000 is being spent on the erection of anti-tuberculous dispensaries, of which 30 exist, while there are upwards of 1000 beds for tuberculous subjects scattered in various sanatoriums and isolation hospitals.

Venereal Disease.—Antivenereal dispensaries have been established by the Government where cases of venereal disease which have been sought out are

reated gratuitously, while reliance is here much put pon the distribution of pamphlets and explanatory otices. But the illiteracy of the countryside has to e combated, and flamboyant use is being made of the heatre, the cinema, the museums, and exhibitions, hile illustrated posters give lessons of warning of an nmistakable sort.

The Medley of Yugoslavia.

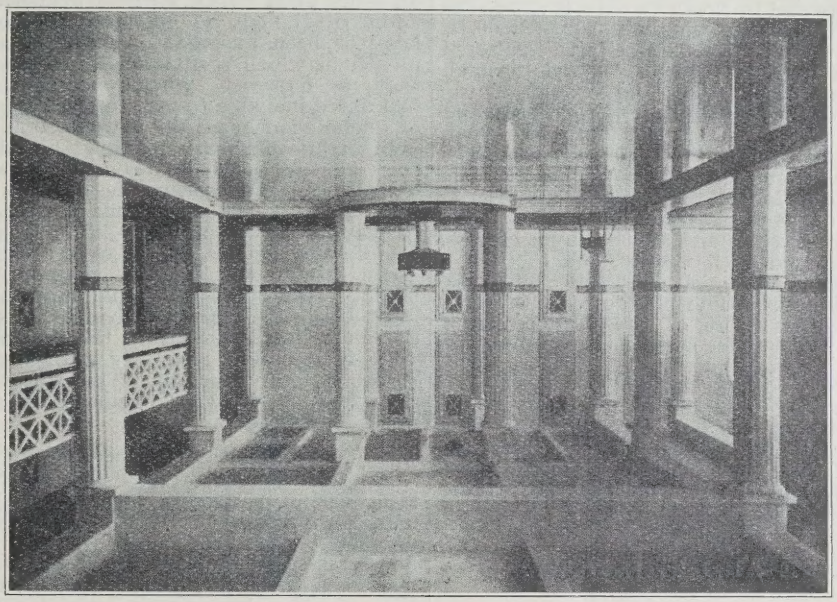
The thing that most strikes the tourist in Yugo-avia, whether medical man or no, is the extra-rdinary and intimate mixture of the new with the ld. In many districts where the natural conditions ake it poss-le agricul-re is in an dvanced tate, in hers it is the most ementary rt. In any places e resources advanced vilisation -hotels, ams, cine-as, good ghting, d sewer-e — leave thing to desired; others ere can as t be little t the most dimentary tempts in y direc-n.

In the ties of anjaluka d Sera-vo, the pital of snia, large streets, handsome shops, and fine proaches are intimately dove-tailed into rambling ental bazaars, and costumes reminiscent of every-ing from the pavements of Piccadilly to the Turkish eppes intermingle, though everywhere evidence is thcoming that progress is being made towards gher standards: in exteriors the young women d the way, for throughout Yugoslavia, when we t above the peasant class, the cream legs appear, e cropped heads, and trim clothes of the modern l.

Banjaluka is the site of a well-known Trappist nastery (Fig. 4) which the visitors were invited to spect as far as the outbuildings are concerned and e industries proceeding therein, but the monastic ablishment was not shown nor were many monks evidence. The Order is strictly one of silence, but e conducting monk took full and interesting vantage of the necessity of talking. He described e rise of the Trappists and their elaborate organisa-n to secure proper rules and adequate government; ridiculed the popular stories as to their conduct of and especially their method of burial; and he plained the considerable absence of monks from the ual fields of manual labour by pointing out that, versing the rules of St. Benedict, the Trappists were ly employed in manual labour for three and a half urs each day, but in prayer for seven hours. The standing features of the large buildings were the w church and the old monastery, which is now the st stately cowshed imaginable. The social advan-ges derived by Banjaluka from the monastery are o: first, within its walls a large orphanage is ported, and secondly the monastery has coördinated a valuable market for the local cheese, which is produced by dairies all over the surrounding area. The unspeakable road leading to the monastery communicates directly with a fine modern city thoroughfare which later dies away into a typical eastern market.

In Serajevo the blend of old with new, and east with west, was even more marked. The visitors were specially permitted to inspect one of the most famous mosques in Europe, while some of them took advantage of having a Turkish bath in a city which for generations suffered Turkish rule—an experience which proved that this form of balneology is very well conducted in London. Serajevo possesses fine streets, shops and bridges, and all the provisions for public health are in evidence, but the delightful market in its centre is an intricate network of alleys. (See Fig. 5.)

FIG. 7.



The Bath in the Toplice Hotel, Bled.

The same medley was noticeable at Mostar, the capital of Herzegovina, where the Roman foundations exist of the famous bridge which gave its name to the place. Here the bazaar quarter, running down numberless little streets alongside the river, and nestling under the arch of the bridge, conveyed the exact impression which many derive from pictures of Eastern commercial quarters; but a few yards from the jumble of booths and outhouses, comprising the bazaar, a broad modern bridge has been constructed, and a hotel erected that would have done credit to any capital in Europe. This was being run on modern lines for a crowd of guests, and as the old hostelry, adjoining one of the infrequent railway stations of the country, was also functioning briskly, an opportunity of drawing comparisons was offered; the new hotel may reproduce modern vulgarities in striving after better things, but the extent to which the old one had fallen behind what to-day the European traveller expects would be difficult to describe.

The Adriatic Coast.

From Mostar the party proceeded west, reaching the Adriatic coast at the delightful old town of Ragusa (Dubrovnick). Here all traces of oriental occupation had ceased, the old parts of the city being represented by the mediæval architecture of Venice as a ruling power in the world, while the more modern parts and the environment make up a holiday resort, where bathing in the sea and the sun can be enjoyed in lovely surroundings. Proceeding by boat from Ragusa through the many islands to Sparlato (Split) and by car to Sebenico (Sebenik), there was found at the latter city a perfectly modern hospital. This was built by the Austrians in 1883, but large additions have been made to it on a pavilion plan, and it now provides 500 beds, divided into medical and surgical wards, an

infectious block, and special clinics for dermatological and venereal cases, ophthalmic and neurological cases, and childbirth and maternity. Each of these divisions of the hospital is under a chief, while the institution is conducted by 11 medical men, with five lay administrators and a staff of 112 persons. The Mayor of Sebenico proved an enthusiastic cicerone both in the hospital and in his beautiful city—indeed, it is hard to say whether he was more enthusiastic over the modern cleanliness of the hospital or the ancient dignity of his church, of both which he has a right to be proud.

The last lap of the course was now reached and of the other places visited only two presented medical features, and each because of the opportunities offered for enjoyable holidays or convalescence. The first of these, Plitvice, situated in North Croatia, is the centre of a chain of 16 lakes at an altitude of over 2000 ft. (Fig. 2), framed in pine woods and inter-connected by waterfalls. A well-managed hotel stands on high ground facing one of the larger lakes, and all the country around offers beautiful air and scenery and pleasant walks. From Plitvice the journey to Bled, which is practically on the Austrian frontier, lies through the fertile and well-cultivated land of the Slovenes Bled is a delightful little settlement (Fig. 3) on the shores of a transparent blue lake; one hill is crowned by a castle and another by a church, the mountains abound with flowers, and there is a wide choice of hotels, of which the Toplice offers the agreeable provisions of a fine plunge bath (Fig. 7). Bled is the holiday resort of the fashionable of Yugoslavia, King Alexander setting the example.

Yugoslavia in the Making.

These brief notes, it is hoped, will show how vigorously modern civilised amenities are in the making in Yugoslavia; while for medical men the gratifying view is obtained that medicine is proving the great coördinating power in the reforms that are taking place on all sides.

MEDICINE AND THE LAW.

Criminal Lunacy Statistics.

IN the recently issued Criminal Statistics for the year 1926 the figures relating to criminal lunatics are interesting. The total of criminal lunatics received into asylums during that year was 147; this total can be resolved into two classes. In the one class are the "King's Pleasure lunatics," who have been found insane by a jury, either on arraignment or by the peculiar verdict of "guilty but insane." In the other class are the "Secretary of State's lunatics," who have been certified insane either before trial or after conviction. No fewer than 91 persons were certified insane after conviction while serving sentences in prison. So large a figure inevitably raises a doubt whether the law has not held many of them responsible for crime when, in fact, they were irresponsible through mental disease. It hardly seems satisfactory that out of 147 persons admitted as criminal lunatics during the year, hardly more than one-third should have been recognised as insane by a judge and jury. In the previous year, it may be mentioned, more than half the total admissions to criminal lunatic asylums were authorised by certificates given after the lunatic had been convicted and while he was serving his sentence in prison. Is there not a strong inference that these cases of insanity should have been detected earlier before the crime was committed? Can we afford to be dilatory in certification? Even in human life alone the criminal lunatic is costly to the country; out of 874 criminal lunatics in detention at the end of 1926 no fewer than 399 had been charged with murder. The danger and expense of the criminal lunatic to the country might be diminished if public opinion would support the medical profession when called upon to give a certificate under the Lunacy Act. So far, however, from receiving public support, the medical practitioner is constantly being reminded of his personal liability to heavy damages if he undertakes the unwelcome duties which lunacy legislation has imposed upon him.

Drunk or Not Drunk.

The Criminal Statistics show a steady fall in the number of non-indictable offences dealt with by courts of summary jurisdiction in respect of the intoxicating liquor laws. On the other hand, there is, of course, a steady rise in the number of offences against the Highway Acts in relation to the use of motor-cars. A generation ago the quinquennial average of offences by motorists was less than 2500; in 1926 the figure was 163,301. In a considerable proportion of these cases the accused is charged with being drunk while in charge of a motor-car, an issue upon which medical evidence is frequently adduced, though no adequate test of drunkenness has yet been evolved. A case was reported last month in which a divisional surgeon gave evidence that a motorist, when examined, was slightly inebriated but able to walk quite straight. He smelt of alcohol, continued the witness, but was extremely civil in his manner. "I say," he added, "that in the condition in which I saw him he was not able to drive a car safely because he did not know what he was doing . . . he was drunk in law; he was not fit to drive a car when I saw him; he was muddled." The stipendiary magistrate observed that he had no doubt in his own mind that the man was drunk but that, in view of the divisional surgeon's evidence, he must dismiss the charge of drunkenness. Presumably a man is not drunk from the magisterial point of view if he is only "slightly inebriated" and is able to walk quite straight. The witness's expression that the motorist was "drunk in law" was evidently unacceptable to the law.

Non-disclosure of Insurance to Juries.

A curious point of forensic etiquette was settled last week in connexion with the trial of claims for damages arising out of street accidents. It is an unwritten rule that counsel for the plaintiff should not mention to the jury the fact that the defendant was insured. The principle underlying this rule is that, if a jury knows that a rich insurance company stands behind the defendant, it will be more ready to decide that the defendant was negligent and to award substantial damages against him. There was no very strong authority in favour of this rule in the law reports until the recent case in which a plaintiff appealed against an order of his honour Judge Cluer discharging a jury in the Shoreditch County Court and directing that a case be tried before a fresh jury on the ground that counsel for the plaintiff had intimated to the jury that the defendant was insured. On the appeal being heard in the Divisional Court there seemed to be some doubt as to what counsel had actually said; but Mr. Justice Salter's judgment made it clear that the rule of non-disclosure is well founded and should be enforced by a judge at trial. On the other hand, Mr. Justice Talbot, while concurring in this judgment, suggested that the rule perhaps no longer worked for justice. No jury nowadays can help knowing that in the majority of cases of motor accidents the motorist is insured. Or, perhaps, added the judge, if the jury does not know that a defendant is insured, it may refrain from awarding heavy damages where such an award would be thoroughly justified. Mr. Justice Talbot suggested that it would be better to disclose frankly to the jury the fact of insurance or non-insurance, the judge being careful to give an express warning to the jury not to allow the fact of insurance to influence the verdict.

This view is fortified by some recent remarks of Lord Justice Scrutton on the changing temper of juries. Once, he observed, when motor-cars were rare, no jury would find in favour of a motorist; but now probably half the jurors own motor-cars themselves and can thus be relied upon to deal fairly with motoring cases. In fact, he added, it is difficult to get a criminal conviction of a motorist before a jury.

Correspondence.

'Audi alteram partem."

MULTIPLE DENTAL EXTRACTIONS.

To the Editor of THE LANCET.

SIR,—In his interesting address, which you ublished recently, Dr. Harvey Hilliard assumes hat major dental operations can always be safely arried out at one sitting. That is not my experience, or, I believe, that of dental surgeons in general. ach case should be treated on its merits with regard o the amount of sepsis present and the state of the odily resistance. When sepsis is severe and resistance ow it seems to me wrong to extract a large number of eeth at one time, for in my experience the amount of oxic absorption is directly proportional to the number f teeth removed and to the size of the resulting wound. he sockets are already infected and the teeth that e left do not play much part in absorption. In any ase it is inaccurate to speak of clearing out all septic atter from the mouth at one operation; the bone nd soft tissues are largely infected and extraction of eth does no more than remove the cause of the fection, leaving the bodily powers to deal with the eeper sepsis—a process which takes time. So-called ptic sockets—i.e., sockets from which the blood-ot has dissolved after extraction—are, I believe, arly always associated with undue laceration of the ssues and injury to the bone due to difficult or expert extractions.

Personally I have found the best procedure in cases here general toxic symptoms are present is to move the back teeth under nitrous oxide anæsthesia two operations with an interval of about a week tween, and then to allow a further fortnight for the ums to heal and the patient to deal with the absorp-on of toxins before the remaining front teeth are moved. In this way I find that the patient suffers tle if at all from general upset. I have a case in ind of a lady, 40 years of age, who had been three onths in bed with symptoms of mucous colitis sociated with severe anæmia suggesting sprue. Her ood count was R.B.C. 3·2 million, Hb. 60 per cent. d still falling; weight had dropped from her rmal 10 st. to 6 st. 6 lb. She had lost her 12 front eth and the condition of the remainder made it sirable to remove them all. Four were removed der gas with little general reaction, a few days later more when a severe exacerbation of colitis occurred d the patient became really very ill. Finally, er a fortnight, the remaining teeth were extracted thout mishap. She then made an uninterrupted covery, six months later her blood count being B.C. 5 millions, Hb. 100 per cent., and her weight st. Had the extractions all been carried out at e sitting my impression is that she would have died. I feel confident that the bad results to which Dr. lliard refers as arising when teeth are removed in ccessive stages are the result of not leaving sufficient ne between the stages. Three stages are in most cases fficient.—I am, Sir, yours faithfully,

A. H. JOHNSON, L.D.S. R.C.S.

London, April 27th, 1928.

TE TREATMENT OF ULCERATIVE COLITIS.

To the Editor of THE LANCET.

SIR,—On Dec. 4th, 1926, you published the address h which I opened a discussion on Colitis at the dical Section of the Royal Society of Medicine. it I described the excellent results which follow treatment of ulcerative colitis by the intravenous ection of antidysenteric serum. I was surprised refore to read in your leading article of April 28th t the results of serotherapy "were disappoint-; and its use has now been largely abandoned." e need for drawing attention to the treatment can gathered from the uniformly pessimistic views of the speakers in the discussion on ulcerative colitis at the Harveian Society, reported in your last issue. Sir William Willcox believed that many cases are hopeless from the first, and Dr. Bellingham Smith recorded a mortality of 24 among 46 cases. Mr. Lionel Norbury stated that several years of regular irrigation through an appendicostomy are required to effect a cure, and Dr. French advised colectomy as the only treatment he had known which ever gave good results.

In 1920, in the belief that the disease was really an aberrant form of bacillary dysentery, I tried the effect of intravenous injection of large doses of polyvalent antidysenteric serum. In the first case the result was little short of miraculous. A young man, who was almost moribund after being very ill for over a year, and in whom no improvement had followed an appendicostomy, recovered completely in a fortnight; five days after the first injection the sigmoidoscope showed that the innumerable ulcers seen a few days before had vanished, and nine days later the appearance of the mucous membrane was absolutely normal. In the eight years which have elapsed he has had one slight recurrence, which rapidly responded to serum treatment, and he is now perfectly fit. Since 1920 I have used antidysenteric serum as an essential part of the treatment in every severe case, generally with excellent results. I realise that the treatment may really be non-specific and nothing more than a form of protein shock, although in one case it proved very effective after a series of injections of ordinary horse serum had failed to produce improvement. The dosage I now use is 40, 60, 80, and 100 c.cm., injected intravenously on successive days, followed by 100 c.cm. for a few additional days. The reaction is occasionally somewhat alarming, but it is hardly ever dangerous.

The only fatal case I have had among my 25 hospital and private patients since I first tried the serum treatment was a woman, who died of broncho-pneumonia when she was improving as a result of an appendicostomy, performed on my advice a few weeks earlier. In three other cases an appendicostomy had been performed, but without obvious benefit; it was allowed to close when they came under my care, and the medical treatment was substituted with ultimate success.—I am, Sir, yours faithfully,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, April 30th, 1928.

To the Editor of THE LANCET.

SIR,—In the recent discussion on ulcerative colitis at the Harveian Society, as reported in your last issue, a note of pessimism in regard to treatment was struck which cannot be allowed to stand without comment. One speaker states that "while the symptoms might improve considerably, the sigmoido-scope usually showed that the condition was little altered. Ulcerative colitis was one of the most serious conditions of intestinal disorder and one of the most difficult to cure, *requiring several years of regular irrigation through an appendicostomy.*" Another speaker said that "*the condition was practically incurable and could only be relieved.* Of his 46 cases 24 had died" (italics mine). Serum treatment received no consideration, and the opener of the discussion said that it was not indicated in the ordinary chronic colitis of civilian practice. This so far conflicts with experience at Guy's Hospital that I feel it would be wrong not to join issue with the speakers quoted.

In 1921, Dr. A. F. Hurst first described [1] the successful employment of polyvalent antidysentery serum in chronic ulcerative colitis. Since then the method has been employed as a routine in his wards and was also employed in Dr. John Fawcett's wards. As assistant physician successively to Dr. Fawcett and Dr. Hurst, I have had opportunities of seeing their cases as well as my own. We all formed the opinion that the prospects of healing in ulcerative colitis were greatly improved, and that the period of

[1] Guy's Hospital Reports, 1921, lxx., 26.

hospitalisation was shortened and the mortality reduced by serum treatment. Cases, both early and late, and incidentally some with severe anæmia and wasting, have, after showing no response to other methods improved steadily after a full course of serum. Treatment has always been controlled by sigmoidoscopy, and I have personally witnessed complete healing of ulcers, together with clinical recovery, disappearance of blood from the stools, and reappearance of formed stools. I have had three cases under my care in Guy's in the last three months, two of these (cases of moderate severity) have been discharged convalescent after treatment lasting a few weeks only. The third, one of the worst cases I have seen, with an extremely hæmorrhagic type of lesion, is now, after six weeks, beginning to pass formed stools and shows commencing healing of her lesions. In 1925 a nurse with a three years' history of ulcerative colitis, complicated by thrombosis in both legs, was admitted to Guy's under my care in poor condition, with typical symptoms and sigmoidoscopic appearances. She had been given a small and quite inadequate dose of serum some months before her admission, and for this reason treatment had to be initiated with caution. After a full course she improved steadily. She weighed 9 st. 5 lb. on leaving the ward in November, 1925. In June, 1926, I saw her again and she was fit and well, weighed 11 st., and was passing two or three formed actions daily with a very occasional streak of blood. In March, 1928, I saw her again on account of a small ulcer on the leg, consequent upon the thrombosis. She remains perfectly well in herself and has no bowel symptoms.

I have had no occasion, in my own small series, to resort to surgical measures. I have, of course, seen cases in which the treatment was unavailing and when stricture or polyposis have developed the time for such treatment is clearly past. I can recollect only one case of my own in which improvement did not follow the treatment. In this case my house physician, through a misunderstanding, gave antistreptococcal instead of antidysenteric serum. It would seem either that the experience at Guy's is different from experience elsewhere, or that others have not given the method an adequate trial. A fuller discussion of the treatment, which must include large doses given by the intravenous route, will be found in the Proceedings of the Royal Society of Medicine, 1927 (No. 4), p. 367.

I am, Sir, yours faithfully,

Wimpole-street, W., April 30th, 1928. J. A. RYLE.

HAS THE CAMPAIGN AGAINST VENEREAL DISEASE BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—Mr. Johnston Abraham blesses the Edinburgh Corporation Bill, apparently because he seems to think that the compulsory measures which it desired to enforce would help the campaign against venereal disease which we all have so much at heart.

I have read his letter carefully, as his authority to speak on such a subject is unquestioned. He points out, I think with perfect justification, that treatment of syphilis under the voluntary system has been eminently successful. He thinks that the same statement cannot be made about gonorrhœa, and he points out a distinction between these two diseases—namely, that out-patient treatment is, on the whole, adequate for syphilis, but is inadequate for gonorrhœa. I think, in assuming that the conditions for treatment for gonorrhœa would be bettered if the Edinburgh Corporation had been able to secure the passage of the Bill, he is entirely mistaken. Perhaps he is not aware that before the second reading the Corporation dropped their clause asking for compulsory detention, and with that surely disappears Mr. Abraham's chief reason for support of the Bill. It is true, as I said in my speech upon the second reading, that the Corporation appear to think that they can, in fact, secure some form of detention under the Public Health Acts already on the Statute Book without fresh legislation for which they were at first pressing. This is a legal question upon which an eminent K.C. in the House of Commons has given me his opinion that these Acts do not, in fact, carry that sanction. Whether this be so or not I do not know, but I would point out that without hospital provision upon the large scale for detention, and for the long periods which the circumstances of the disease require, detention would be impossible to enforce. Surely it would be more sensible to provide the accommodation required for the proper in-patient treatment for gonorrhœa as advocated by Mr. Abraham, and to rely upon the voluntary system for persuading the patients to undergo the treatment. I do not think there would be any difficulty in achieving this purpose if the accommodation were there; it is the absence of accommodation, and not the lack of compulsion, that militates against the in-patient treatment of gonorrhœa upon the scale required by Mr. Abraham; and compulsion does not seem to me to be any necessary part of his proposition.

To ask for compulsion restricted to one town is surely a contradiction in terms. It could not, in fact, be compulsory under those circumstances. Compulsion must either be universal or must fail in its effect. An experiment could not be restricted to Edinburgh. Mr. Abraham says that medical opinion "all over Scotland" was in favour of the Bill. I should like to know upon what evidence he makes this statement. The Corporation, in presenting their case, could find no better medical support than the vote given at one meeting of the Edinburgh Division of the British Medical Association held a few weeks ago. The meeting was called by the promoters of the Bill; whipping was freely indulged in. I am informed that about 60 members attended the meeting, and inasmuch as there are some thousand persons (not 1500, as I am reported to have said) practising medicine in Edinburgh, that vote, which was not a unanimous but a majority vote, cannot be claimed as representing medical opinion, even in Edinburgh. I am not aware that any other steps have been taken to ascertain the opinions of the medical profession in Scotland, and should be glad to have the information.

I am, Sir, yours faithfully,

House of Commons, April 30th. E. GRAHAM LITTLE.

To the Editor of THE LANCET.

SIR,—It is more than a little interesting to know from Mr. Peart's letter in your last issue that in the silver preparations and in potassium permanganate we have remedies as effective in the treatment of gonorrhœa as is arsenobenzol in syphilis. Most venereologists have used, and still use, these preparations, but I know of no one who has found, by practical experience, that they are comparable in any way to arsenobenzol in syphilis. But then most of us use them by irrigation per urethram, which method, Mr. Peart informs us, is a faulty method of administration.

Mr. Peart says: "I have found injection of the vas absolutely reliable in dealing with every stage of the disease." It is very difficult to grasp this statement, which can only mean that Mr. Peart performs the operation of vasotomy on all cases of male gonorrhœa—acute, chronic, anterior, posterior—and its complications. The generally accepted view is that vasotomy is indicated in: (1) gonorrhœal arthritis, where it is found that the seminal vesicles are infected (as occurs in the majority of cases) and where it has been impossible to empty the vesicles by massage; (2) spermatocystitis of a chronic character; (3) azoöspermia, secondary to spermatocystitis. The operation, when done through an incision, is a comparatively simple one, if one follows the technique of Belfield [1] or of Kidd,[2] but it is not so simple that it is applicable to patients suffering from conditions

[1] Belfield, W. T.: Jour. Amer. Med. Assoc., April 22nd, 1905, and Dec. 25th, 1909.

[2] Kidd, F.: THE LANCET, 1923, ii., 213.

ther than those enumerated. My own practice after asotomy and the injection of (say) collargol, is to eep the patient in bed for four days.

If Mr. Peart actually, as his letter suggests, injects, rough the vas, preparations of silver and potassium rmanganate in *every* stage of the disease, it would e instructive to have a description of his routine d his technique for a case of acute gonococcal nterior urethritis. Every venereologist would be ad to compare the results of such treatment with rigation.—I am, Sir, yours faithfully,

E. TYTLER BURKE,
V.D. Medical Officer for the City of Salford.

April 28th, 1928.

To the Editor of THE LANCET.

SIR,—We do not wish to raise any word in opposition Mr. Johnston Abraham's plea for more beds for e treatment of gonorrhœa in women or to controvert s general statement on the deplorable lack of results hich have followed the introduction of the scheme t forward by the Ministry of Health in 1917. hen, however, he says that gonorrhœa in the female a most intractable disease and, as far as out-patient eatment is concerned, cure is exceedingly difficult, e desire to point out that, though this may be true the methods commonly in vogue, it is most certainly t true of the method of treatment by diathermy troduced by us at St. Bartholomew's Hospital and actised there since 1919.

A preliminary communication on the subject was ade to the Section of Electro-Therapeutics of the oyal Society of Medicine in January, 1922, in which e were able to state that 12 cases which had come th a diagnosis of gonorrhœa, bacteriologically nfirmed, had been treated, and that in all but one these, after three to five applications of diathermy, ere was no clinical or bacteriological evidence of fection, whilst subsequent observation over periods nging from two months to one year showed that the fection had been definitely removed. At the British edical Association meeting held at Portsmouth in e following year it was reported that six additional ses had been treated, and that of the total number of all but one had finally been found free from fection.

Since these communications we have continued to eat gonorrhœa in women by diathermy with satisctory results. The success is as invariable as the st series of cases led to us suppose, but probably ring to a different class of case coming under eatment, it has been realised that the number of plications required is sometimes more than the ree to five given in the first series, some requiring many as 12. The treatments are given twice weekly. about ten days, therefore, many cases are rendered e from infection, whilst some take as long as six eks. The potency of diathermy is further shown the invariable disappearance of metastatic infection d the absence of communication of infection on arriage or on resumption of marital relationship. ull descriptions of the method of application have en given in a book [1] published by us on the subject d in papers read at the Royal Society of Medicine [2] d articles in various journals. The cases, with few ceptions, have been treated as out-patients, and ere can be no doubt that the method is suitable for e under such conditions. It must be strongly phasised, however, that the treatment of the pelvic gans by diathermy cannot be properly conducted by rses, orderlies, or other attendants who are not roughly acquainted with pelvic anatomy and the cessary manipulations and passage of electrodes. oper skill and knowledge must be exercised to ensure ccess and to prevent injury to the patient. In our nds an accident or untoward event has never curred.

This letter has not been written for the purpose of ging that treatment of gonococcal infection by athermy should be adopted at the special treatment centres. The method may be too costly, or unsuitable for some other reason. This is not specially our concern. Our object is to point out that there is a means of bringing gonococcal infection in women to an end in a short space of time, and almost invariably, and that the method is suitable for out-patient treatment. The results we have obtained have been confirmed by workers scattered throughout this country and in other parts of the world.

We are, Sir, yours faithfully,

E. P. CUMBERBATCH.
C. A. ROBINSON.

Upper Wimpole-street, W., April 27th, 1928.

[1] Treatment of Gonococcal Infection by Diathermy. Wm. Heinemann. 1925.
[2] Proc. Roy. Soc. Med., Jan. 16th, 1925.

SPLENOMEGALY ASSOCIATED WITH ASPERGILLOSIS.

To the Editor of THE LANCET.

SIR,—The annotation under this heading in THE LANCET for April 14th (p. 767) will perhaps serve to direct attention to the fact that in France, for a year or two past, it has come to be generally believed that some cases hitherto regarded as cases of Banti's disease are associated with the presence in the spleen of mycelial structures now commonly known as *Aspergillus nidulans*. Those who believe that this mycelium is causal to the symptoms speak of the conditions as constituting *la mycose splénique de Nanta*, or Nanta's mycosis of the spleen, in honour of Nanta and the Algerian school of medicine. Others, like Oberling, question the causal importance of the organism, in at any rate the sense of Nanta, whilst a third group frankly "does not believe" in it as causal at all. That such a mycelium does occur in certain cases appears, however, to be the fact.

We need not therefore forget that the presence of a mycelium in the spleens of certain cases of splenomegaly and Banti's disease was demonstrated by Dr. A. G. Gibson, of Oxford, in a paper read before the Royal Society of Medicine.[1] Oddly enough, Léon-Kindberg, in his article [2] published in 1927 makes mention of Dr. Gibson's later work,[3] declaring him "nettement partisan de l'origine infectieuse" of Banti's disease, then going on to make mention of the first reports by Nanta, Pinoy, and Gruny, ascribing causality to a streptobacillus. This work of these observers seems to have been abandoned by them in favour of that later which, alleging the presence of the *Aspergillus nidulans* or *nantæ*, does not seem to do more than repeat what Gibson had already shown. And a rather bitter attack by Langeron,[4] upon the work of Nanta, seems to have been made in ignorance of the importance of the work already done in England.

One thing is clear: the appearances first demonstrated at the Royal Society of Medicine in 1913 are mycelial and constant for a group of cases, whatever may be the importance finally allotted to them.

I am, Sir, yours faithfully,

F. G. CROOKSHANK.

Wimpole-street, W., April 23rd, 1928.

LIVER IN PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—In your leading article last week you do not mention a point of view which, as it seems to me, goes far to explain the beneficial results accruing from the treatment of pernicious anæmia with liver or an extract thereof. It is held by many (with whom I am personally in agreement) that the true pathology of the disease lies in the persistence of embryonic erythropoiesis in the liver, which normally ceases at birth. In consequence, the normal method of production of erythrocytes in the bone-marrow, via the normoblast, never properly develops. When therefore some extraneous factor comes into play—

[1] R.S.M. Proceedings (Medical Section), 1913, vii. 7–9.
[2] Nouveau Traité de Médecine, ix., 677.
[3] THE LANCET, 1921, ii., 885.
[4] Presse Médicale, April 18th, 1928, p. 482.

of which sepsis, hæmorrhage, and syphilis are the most common—the bone-marrow receives what may be loosely described as a fatal blow. The evidence for this is chiefly to be found in the presence of embryonic erythroblasts in the circulating blood, and the process itself can be seen in situ in the liver post mortem. Quite recently I have examined a portion of liver removed during the operation of splenectomy in a case of pernicious anæmia. The notes will shortly be published in full, but I may say here that there could be no doubt that the case was one of true pernicious anæmia, or that the appearances in the liver were those of embryonic erythropoiesis. Incidentally, the organ contained no free iron. The blood picture has returned to normal under treatment by raw liver.

I submit that the explanation of the action of liver diet may be found in the view that a liver in which embryonic erythropoiesis is persisting is deficient in the production of the normal hepatic stimulant to, or control of, the bone-marrow; administration of raw liver, or an active extract thereof, supplies this substance and thus in time the bone-marrow is able to resume its normal functions. In the "embryonic" conception of pernicious anæmia, hæmolysis and achlorhydria are regarded as accessory and not causative factors, and not as essential for the diagnosis of the disease. Your leading article would seem to support this last point.

I am, Sir, yours faithfully,

A. KNYVETT GORDON.

Bedford-square, W.C., April 28th, 1928.

INJECTION TREATMENT OF VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—The procedure I prefer for the treatment of varicose veins is the one I saw Prof. Sicard using at his Paris clinic. The needle is inserted while the patient is standing on an operating table; when blood has been drawn he is directed to lie down very slowly; the injection is made in this position. If the vein is large the patient is recumbent from beginning to end.

The reasons for this preference are as follows. Normally the flow of blood is from the superficial to the deep veins. Sicard was able to demonstrate by injecting lipiodol into varicose veins that in the horizontal position the blood from the superficial veins had no tendency to join the deep veins; with the patient in this position, therefore, the sclerosing solution is not carried away by the blood stream, and is thus able to act locally. The other reason is that with the patient recumbent we are dealing with a comparatively empty vein, so that the sclerosing solution has every opportunity to come in direct contact with the endothelium, a most important and essential factor for success.

When the patient is erect the flow of blood in the varicose vein is centrifugal and not towards the heart. This has been shown by Tentzer, Sicard, and Gally, and Delater, working with solutions opaque to X rays, and by Magnus, who used a hæmodromograph. The radical operation, which has until recently been the treatment par excellence, is unsatisfactory because one can never be certain that the valves of the communicating veins between the superficial and deep vessels are not so inefficient as to allow a reflux from the deep veins into the superficial ones; and here, no doubt, lies the cause of the innumerable failures of surgical intervention. The aim of the treatment with a sclerosing solution is to obliterate the entire varicose system right down to the valves leading into the deep veins, and it is the only treatment which can claim to accomplish it. The principle is an old one, being based on the observation that injury to a vein may lead to thrombosis and spontaneous cure. The injected sclerosing fluid injures the intima and penetrates the tunica muscularis to reach the adventitia, as has been demonstrated by Tentzer. This observer added collargol to a solution of sodium salicylate, which he injected into a varicose vein, and on removing the vein a few hours later was able to show the presenc of collargol (and therefore of sodium salicylate throughout the thickness of the venous wall and eve outside it. The opposing venous walls swell and com into contact with each other; at the same time network of fibrous tracts is formed, which ancho themselves to the whole surface of the injured endo thelium and to the whole thickness of the wall. Al the fibrous deposits adhere to these tracts, and a fre clot is not formed. By way of these tracts th thrombus is firmly attached to all three layers of th venous wall and is unable to detach itself, so tha embolism is impossible.

My experience of many hundred cases is entirel based on the use of Génévrier's quinine solution (star with 0·5 c.cm. and do not go beyond 1·0 c.cm.) an of 30 to 40 per cent. sod. salicylate, of which 1 t 3 c.cm. may be used. Looking through the British an continental papers on the subject I have counted th number of administrations; they almost reach si figures, but not a single case of embolism due to th use of the above-named substances is reported. Ther have been a few fatal cases, but they were due t NaCl + Glucose or other sclerosing substances.

I fully endorse the contra-indications mentioned b Mr. Maingot and Mr. Carlton, but would add tha pregnancy is, in my opinion, an absolute contra indication to the use of any sclerosing solutions, a the varicose state is here chiefly due to change endocrine metabolism and might entirely disappea after parturition. Certain forms of varicose vein such as those resembling a sponge and those com plicated by cutaneous lesions, do not respond we to the treatment. Before deciding whether the case i suitable it is, of course, essential to be sure that th patient's discomfort is actually due to his varicos veins. The coincidence of varicose veins wit neuritis, periostitis, arthritis, and of flat-foot is ver liable to cause confusion.

I am, Sir, yours faithfully,

London, W., April 23rd, 1928. A. A. MILLER.

To the Editor of THE LANCET.

SIR,—In a paper published last year [1] I recommende that injections should be made with the patient in sitting posture, the chair being placed on a dais fo the sake of the operator's convenience. Since then however, I have treated over 100 cases in the followin manner, and find it much more satisfactory.

I still employ my dais, but the treatment can be accon plished quite well without it. The patient remains standin and puts his weight on the leg to be treated. A pneumati tourniquet is then placed above the knee and the pressure i it is raised sufficiently to restrict the venous flow. (On m own tourniquet I have an aneroid manometer which I caus to register 130 mm. of Hg, but this, though a useful refine ment, is, of course, not a necessity.) The patient is the asked to lie down; I use a reclining chair with an adjustab foot-rest, but a consulting room couch does almost as wel The needle without the syringe is inserted into the vein an as soon as a bead of blood shows in its lumen the tourniqu valve is unscrewed, the leg is elevated above the plane of th body, and the veins are emptied by gently but firml stroking towards the thigh, and the injection proceeded wit secundum artem.

I am aware that many authorities do not agree wit the use of the tourniquet, but if the following precau tions are taken I am sure this method will be foun to be most efficient.

(1) Be sure that the vein shows up as a definite varico vein before the tourniquet is applied, and is not merely normal vein which has dilated owing to the extra pressu imposed by the tourniquet. (2) Do not forget to remove th tourniquet pressure the moment the vein has been entere

The following appear to me to be the advantages this method. (1) It is much easier to enter th selected vein with the patient's leg in the horizont plane. (2) Since the operator can sit comfortab alongside the patient and rest his hands on the lim he has a much steadier control upon the syringe an needle, and this, I think, is a great advantage whe

[1] Practitioner, 1927.

is so important that the point of the needle shall emain within the vein throughout the injection. 3) The vein being collapsed and practically free from lood, the solution will act in greater concentration nd will be more constant in its action. (4) Since the atient is either prone or supine there is less tendency o faintness and certainly less danger should this occur.

For sterilising the skin over the vein a 5 per cent. olution of thymol in alcohol will be found efficient. n withdrawing the needle from the vein I firmly ress one finger over the puncture and keep it there or a minute or so, when I apply a small lenticular bject to replace my finger and keep steady with a elastic band. This remains in position for ten inutes, after which I allow my patient to stand up nd conclude the "sitting." I prefer the salicylate olution for the larger veins, but feel that the quinine-ethane is more suitable for the small veins or for eins with very degenerated walls. Finally, I would commend that possible idiosyncrasies should be ept in mind. Quite recently a patient told me, on eing questioned, that she was once given five grains of pirin and collapsed after it, and that a tiny dose of uinine always produced a most distressing rash.

I am, Sir, yours faithfully,

RONALD THORNHILL.

Harley-street, W., April 23rd, 1928.

DOCTORS AND THE NURSING HOMES REGISTRATION ACT, 1927.

To the Editor of THE LANCET.

SIR,—This Act is of interest to the many hundreds, not thousands, of doctors who receive into their ivate houses persons known as "private patients" paying guests—this latter euphemism being opted to solace the patients or relatives. The sition is this. Before July 1st next every such ctor who receives into his private house even only e mentally or physically ill patient, and includes an agreement or contract the provision of nursing," whether by a nurse or attendant or herwise, will have to register that house, which ll become then subject to inspection, from basement roof and in all its contents, domestic and pro-sional, whether alive or dead, by the local super-ing authority, displaying in addition, in a con-cuous position in his house, his certificate of istration.

There are only two ways for him to escape from s objectionable position. Either he should cease, from July 1st, to receive such patients, or if nursing" is required, *he should stop the provision nursing*, arranging that this should be an extra ond his contract. He should recommend to the atives a suitable person *for them* to engage, charge m for board and residence, receive as the agent m the relatives the wages, and, handing them r from time to time to the nurse or attendant, ain a receipt for same addressed to the relatives. the case of those doctors whose houses cannot be ducted on these suggested lines and must, in sequence, become registered, I would urge that y get into touch as soon as possible with their l authority (county or county borough) and obtain opy of the draft by-laws in order to see whether y contain anything thought objectionable. If then the recognised local medical organisation uld be urged to take immediate steps before it ound to be too late.

I am, Sir, yours faithfully,

ove, May 1st, 1928. E. ROWLAND FOTHERGILL.

EXPERIMENTAL PHONETICS.—At the Linguistic gress held at The Hague in April, an International ety of Experimental Phonetics was founded, the object hich is the promotion of scientific research in experi-tal phonetics. The society will issue a bulletin from to time. The membership fee for 1928 is 5*s.*, and lications, with fee, may be sent to Prof. E. W. Scripture, delhofgasse 4, Vienna, Austria.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

REGISTRATION (BIRTHS, DEATHS, AND MARRIAGES) BILL.

On Friday, April 20th, Captain GUNSTON, in moving the second reading of the Registration (Births, Deaths, and Marriages) Bill, said it was intended to deal with the chaotic system of remunerating and appointing registrars. Although it was a national and centralised service, the officers engaged in it were partly paid by the Guardians, partly by the Exchequer, and partly by fees from the public. The Bill did not propose to take away the good fortune of any officer who was earning good remuneration from fees, but it proposed that when a vacancy occurred, the Registrar-General should be entitled to declare the office a salaried one, and that if there was an excess of fees in the office after the salary had been paid, the balance should go to a central fund to make up the salaries of underpaid officers. Any officer holding a non-salaried office could apply to the Registrar-General to have his office declared a salaried one. Clause 2 provided that the holders of salaried offices should be paid on a scale of salary approved by the Treasury. The clause also abolished the watertight principle of sub-districts, and allowed officers to function over wider areas. Clause 4 made it lawful for the Minister to increase the statutory fees up to 50 per cent. Clause 5 would enable the Registrar-General to give the public the new services which had been demanded since the passing of the original Act. The Bill also provided that proper travelling expenses should be paid.

Mr. G. PETO seconded the motion.

Mr. SCURR moved the rejection of the Bill. He said he opposed the Bill, not because he was opposed to the principle of these officers becoming salaried officers—payment by fees was an absurdity—but because he thought the methods proposed in the Bill would not attain the objects desired. Further, such a Bill should have been introduced as a Government measure.

Mr. MARCH, who seconded the motion for the rejection, said the Government should have been bold enough to bring forward a Poor Law Reform Bill of their own dealing with the whole question.

Payment by Fees Discredited.

Sir KINGSLEY WOOD said that the Minister of Health was very keenly interested in the subject of this Bill. He looked with considerable anxiety on the position of a good many of the registration officers up and down the country. The remuneration of these officers bore no relation to the amount of work that they did, or to the responsibility which was involved. The average total receipts per registrar at present were approximately £137. On the other hand, a number of registrars in larger districts enjoyed very large fees indeed, and in some cases those fees were in excess of what would be regarded as whole-time salaries for such work. Payment by fees had long ago become discredited in this country, and this was the only branch of the public service in which this obsolete system survived. It was far better that the appointment of registrars should rest with the Registrar-General rather than with the boards of guardians. The Bill would not involve any further cost to the State, although it might involve increased fees in some cases. That was only right, as the rate of fees was fixed many years ago, and had no regard to the present conditions. When the Bill got into Committee the Government and other Members of the House might desire to offer suggestions regarding its exact machinery and details, but so far as the principle was concerned there need be no alarm from the point of view of the public.

Vital Statistics.

Colonel FREMANTLE said he was particularly concerned with the social services, and those services, especially in relation to public health, depended very largely upon the wonderful volume of facts got together by the registration system of the country. The whole system of vital statistics was dependent, mainly and fundamentally, on this system of registration, and the vital statistics were essential for purely financial matters, as well as for other purposes for the profession of the actuary with all that it implied. They could constantly check their system of administration according to the results of vital statistics. It was used for research, and could be used much more for research if it was properly centralised as a service. A good many members, especially those interested in scientific matters, were very much concerned with the question of eugenics and the future development of the race. The Eugenic Society had written to him as follows:—

"The advantages to be obtained from accurate statistical information concerning many social questions are becoming more widely recognised . . . . The separate register now

maintained for different purposes should be amalgamated . . . . This Bill would facilitate the introduction of those minor reforms which must from time to time be found to be desirable. It may be hoped that the ascertainment of the differences in the rate of multiplication of the different social classes would thus be made possible, this being a subject of great practical importance so far as the future welfare of the nation is concerned."

There was no end to the possible development of this system. A system had been developed very largely in recent years under successive Registrars-General, and their efficient staffs at Somerset House, but they needed a proper method of control such as was given in this Bill; and he cordially supported the measure.

Whole-time Service.

Dr. VERNON DAVIES said he thought it would be impossible to make this a whole-time service. It was not difficult work; it was not work that required a very high standard of education. In spite of what had been said by Colonel Fremantle, the work of a registrar of births and deaths was to-day almost entirely the notification of certain facts, and these records in course of time went up to London, to the Registrar-General, in whose department all the important work was done. It was absolutely impossible that the work in connexion with the vital statistics could be done elsewhere than in a central place. He did not see how they could make this a salaried service in the smaller districts. There was no reason, however, why means should not be adopted to try to improve the position of the men at present in the service. The position of the registrars had varied considerably in recent years. The building of hospitals and maternity homes in certain districts had had a considerable effect. He had had a return sent to him confidentially by the registrar of a district close to which two hospitals had been built. He informed him (Dr. Davies) that whereas in 1921 he registered 782 births and 340 deaths, by 1927 the number of births had been reduced to 326, and the number of deaths to 262. On the other hand, in the case of one of these hospitals the number of births was 630, and in the case of the other the number of births was 200 where previously there had been no births. In this particular case the registrar of births and deaths in the district in which the hospitals were situated had done exceedingly well by having a great increase in remuneration from fees, but the registrar who had been in practice for many years on the surrounding borders had seen his income very materially decrease, and he (Dr. Davies) would like to know upon what basis of fees that registrar was to be dealt with in the future. He gave general support to the Bill, but expressed the hope that he might be on the Committee which dealt with the measure, so that he might be able to raise one or two points of detail.

The Bill was read a second time.

PROTECTION OF DOGS BILL.

Sir ROBERT GOWER moved the second reading of the Protection of Dogs Bill.

Lieut.-Commander KENWORTHY seconded the motion. He said there were two classes of people who were in favour of this Bill, first of all dog lovers, and secondly those who, on grounds of humanity and decency of feeling, objected to the dog being used as a subject for vivisection and for experiments. There were other animals that could be used.

Dr. LITTLE said he wished to bring forward very special reasons why the dog should not be exempted from these experiments. The dog was absolutely necessary for this type of work, because it was most like the human being in regard to its organs and many other parts of its body. Dr. Little was still speaking at 4 o'clock, when the debate was automatically adjourned under the rules of the House. The Bill was accordingly "talked out."

NATIONAL HEALTH INSURANCE BILL.

THE National Health Insurance Bill was considered by Standing Committee C of the House of Commons on April 24th. Mr. WILLIAM NICHOLSON was in the chair. The Bill amends the National Health Insurance Act 1924, and other enactments relating to health insurance by providing for the application towards the cost of benefits and expenses of administration of certain moneys consisting of contributions, as to which there is either no provision in the existing Act for their being so applied, or they could only be applied in this way in a manner that would not involve a pari passu payment by the Exchequer. The Bill also proposes to bring two additional classes of workers under compulsory insurance. In both respects a fresh liability is imposed upon the Exchequer.

Clause 1: Amendments Moved.

Clause 1 makes provision in the case of a man who becomes unemployed before June 30th or Dec. 31st, that should he become ill prior to the prescribed date, such illness is not to be taken into account as part of the two years' period during which he would be kept in benefit under the Act.

Mr. WHITELEY moved an amendment seeking to extend that position so that if an insured person became incapable of work after ceasing to be employed, the period during which he was incapable should not be taken into account.

Mr. CHAMBERLAIN (Minister of Health) said he hoped the hon. Member would not press the amendment. While they wished to be generous in these matters, some regard must be had to the financial position of the various societies, and the Committee must remember that very generous provision for insured persons was already made under the Clause. The proposal of the hon. Member might mean a very considerable extension of free insurance, and he thought that it would be altogether unreasonable to ask the societies to carry such a burden.

The amendment was withdrawn.

Mr. NAYLOR moved an amendment to enable an unemployed man to be treated as an insured person for a further period of five years beyond the maximum period of two and three-quarter years provided in the Bill.

Mr. CHAMBERLAIN said that an insured person, even after the two and three-quarter years, might be given a still further period of free insurance if he happened to be ill at the beginning or end of the original period. To ask that a man, after having had two and three-quarter years of free insurance, should be given another five years was to ask for something which could not possibly stand examination.

Mr. MELLER said that the Committee ought to bear in mind that they were dealing here not with some charitable gift from the State, but with an insurance scheme. All the concessions given under the Bill would cost money, and he understood that the Actuary had been searching round in every nook and cranny to find money in order to give these concessions, and before those concessions were extended it ought to be shown whence the necessary money could be obtained.

Mr. RHYS DAVIES said that the position was this: provision was already made under the Bill whereby a man who was insured under the National Health Insurance Act, on reaching the age of 60, could be unemployed for five years and yet be entitled to the old-age pension at 65, and his widow would be entitled to pension and allowances if there were any children of pensionable age. All those who supported the amendment wanted was, that the same principle should apply also to the younger men. The number of cases covered by the amendment could not be very large, and it would be a very kindly act on the part of Parliament and of the Minister of Health to do something for these people.

Dr. DRUMMOND SHIELS said he would like to emphasise the effect on the physical condition of men which was caused by a number of years of unemployment. It was very important to keep in mind the linking-up of this scheme with the Contributory Pensions Act. Many of these unemployed men had not been sufficiently fed and they were very liable to illness and death. They had been told that this was an insurance scheme and that they ought to remember that point when considering its finances, but they should also remember that an insurance scheme gave certain benefits and was supposed to ensure that those benefits would be provided.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health): You cannot say that; the benefits are definite under the Act and are subject to conditions.

Dr. SHIELS said that they must remember the obligatory side as well as the financial side. He hoped, if the proposal made in this amendment could not be accepted in its entirety, that the Minister would at least keep these men within the scheme, so that a loss of benefit to widows and children would not result.

Mr. CHAMBERLAIN said that if they carried the argument that a person who became permanently unemployable was nevertheless morally entitled to receive the benefits which he would have received had he been employed to its logical conclusion, they could not stop at five years; they must say that whatever period was necessary to enable the man to fulfil the conditions, would be made up for him. He submitted that that was not a reasonable proposition. The provision already made under the clause had not been fully appreciated by the Labour Party. The people who were left out of consideration were only those who for one cause or another were permanently unemployable and therefore not suitable subjects for insurance.

The amendment was rejected by 18 votes to 15.

Clause 2: Inmates of Hospitals.

On Clause 2 (Amendment of Section 17 of the principal Act as to inmates of hospitals, &c.),

Mr. BROAD moved an amendment to omit the provision that benefit in the case of an insured person who was an inmate of a hospital, sanatorium, or similar institution, should be paid in weekly instalments of not less than 10s.,

ıd not more than £2 per week, and to substitute the ovision that such benefit might be paid in a lump sum.
Mr. CHAMBERLAIN said that in this provision of the ill they were dealing with the recommendations of the oyal Commission. The Consultative Council endorsed ıe recommendation of the Royal Commission, and it was ith their assent and approval that the Bill had been afted in its existing form. He could not therefore agree the amendment.
After further discussion, during which several Labour embers urged the Minister of Health to reconsider his titude on this matter,
Mr. CHAMBERLAIN said that without committing himself that stage to anything, he would be willing to consider is question a little further.
The Committee adjourned.

SUNDAY TRADING BILL.

In the House of Commons on Tuesday, May 1st, Sir F. ANDERSON asked leave to introduce a Bill to restrict the pening of shops on Sunday. He said that no Bill had been assed through the House on this subject since the reign f Charles II., when a measure was passed making Sunday ading illegal and imposing a fine of 5s. for each offence. hat Act still remained the law of the country, save for an ct promoted by the London County Council which pro- ibited street trading by hawkers except under licence sued by the borough council. It was generally realised ıat the present law was obsolete and not fit to deal with esent-day conditions. The present Bill represented the eatest common measure of agreement and reconciled nflicting interests of all kinds. It did not deal with such aces as public-houses, other places of refreshment, or the le of newspapers and periodicals, and medicines and rgical appliances. It also provided for the sale of many her necessary commodities during specified hours.
Leave was given to introduce the Bill, which was brought and read a first time.

HOUSE OF LORDS.

TUESDAY, MAY 1ST.

Local Authorities (Emergency Provisions) Bill.

The Local Authorities (Emergency Provisions) Bill, a easure which appoints the Metropolitan Asylums Board the body to control the distribution of the Metropolitan mmon Poor Fund, was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 25TH.

Medical Services in Palestine.

Colonel WEDGWOOD asked the Secretary of State for the olonies whether the Government medical service in lestine was open to women doctors as in the Federated lay States and East Africa as well as in Great Britain; d, if not, for what reason.—Mr. AMERY replied: There as yet no Government medical appointments in Palestine n to women doctors. The special services for which men doctors are employed in the Federated Malay States d Tropical Africa are adequately provided for in Palestine other agencies.
Replying to a further question by Mr. KELLY, Mr. AMERY d that the special positions dealing with infant welfare ich ordinarily were filled by women doctors were met in lestine with a widespread service of nursing and midwives d, in the opinion of the Government, there was no special ening for women doctors in other capacities.

Maternal Mortality Research.

Sir ROBERT THOMAS asked the Minister of Health whether, iview of the continued high rate of maternal mortality, would consider granting financial aid to research into ts question.—Sir KINGSLEY WOOD (Parliamentary retary to the Ministry of Health) replied: My right hon. nd is proposing to appoint a special committee on ternal mortality, one of whose functions will be to consider need for further research into the question, and that mmittee will no doubt report whether any further financial sistance could usefully be provided for this purpose.

Use of Sulphur in Barley Milling.

Ir. WESTWOOD asked the Minister of Health if he was are that the Public Health (Preservatives in Food) gulations, in so far as the prohibition of the use of sulphur he milling of barley was concerned, was having a serious ct upon the home-barley milling trade; that permission been granted to the cornflour millers to use sulphur; that the granting of permission to use a smaller per- tage of sulphur in the milling of barley than was now d in the milling of cornflour would avoid further unemploy- ment in the barley milling trade; and was he prepared favourably to consider granting to barley millers a similar concession to that granted to cornflour millers under the foregoing regulations.—Sir KINGSLEY WOOD replied: My right hon. friend has received representations that the prohibition of the treatment of barley with sulphur dioxide is prejudicial to British barley millers, and he has also received representations that the prohibition is in the interests of British barley growers. The prohibition applies equally to home-milled and imported barley, and my right hon. friend does not see why any efficient miller should be adversely affected. There is no true analogy between barley and cornflour, since in the former case sulphur dioxide is merely used as a bleacher, and in the latter it is an essential part of the process of extracting the starch from the grain. My right hon. friend does not consider that the addition of this undesirable substance to food can be justified on the ground that it has a bleaching effect, and he regrets, therefore, that he cannot reconsider the decision not to allow its use in barley.

THURSDAY, APRIL 26TH.

Tuberculosis in England and Wales.

Captain BOURNE asked the Minister of Health the estimated number of persons in England and Wales suffering from tuberculosis on Jan. 1st, 1928, or on the latest convenient date.—Mr. CHAMBERLAIN replied: According to the returns furnished to my department, the total number of notified cases of tuberculosis which remained on the registers of local authorities on Dec. 31st last was 363,187.
Captain BOURNE asked the Minister of Health the total number of sanatoria for the treatment of tuberculosis in England and Wales, distinguishing between those maintained wholly or partially from public funds and those supported by fees paid by the patients.—Mr. CHAMBERLAIN replied: The number of institutions approved by my department for the residential treatment of tuberculosis under the schemes of local authorities in England and Wales (excluding general hospitals) is 349, of which 215 have been provided by local authorities and 134 by voluntary bodies. These are all maintained wholly or partially out of public funds. I have no complete information regarding those institutions not so maintained.
Captain BOURNE asked the Minister of Health the number of persons in England and Wales who underwent treatment for tuberculosis in sanatoria during the year 1927, and the average duration of such treatment.—Mr. CHAMBERLAIN replied: Complete particulars for the year 1927 are not yet available. During 1926 the number of persons who received residential treatment for tuberculosis under the schemes of local authorities was 63,680, and the average duration of treatment was approximately 150 days.

Small-pox among Casuals.

Mr. KELLY asked the Minister of Health whether, arising out of the necessity to continue the arrangements for the detection of small-pox among casuals and the issue of Circular 830, pointing out that casual wards should not be closed except in the most exceptional circumstances, he could give any indication as to the extent the advice contained in the circular was being carried out by boards of guardians who had closed, or were contemplating the closing of, casual wards.—Mr. CHAMBERLAIN replied: The circular in question deals with the detection of small-pox among casuals and advises boards of guardians that, in the event of a case of small-pox being found in a casual ward, the temporary closing of the ward should not be necessary if certain precautions are taken; the circular does not in any way deal with the question of the permanent closing of redundant casual wards.

Deaths of Women in Pregnancy.

Sir BASIL PETO asked the Minister of Health whether his department had any statistics of the number of deaths of women in pregnancy from septic peritonitis; and whether he proposed to take any steps to safeguard them against the onset of this condition at maternity welfare centres.—Mr. CHAMBERLAIN replied: The last year for which a detailed classification of the deaths due to pregnancy and child-bearing is at present available is 1925, and in that year there were 84 deaths from septic peritonitis, perimetritis, and pelvic peritonitis. As regards the second part of the question, it is one of the duties of the doctors at ante-natal clinics to detect and remedy any focus of infection which might later be a cause of septic infection.

MONDAY, APRIL 30TH.

Sleeping Sickness in Mozambique.

Sir ROBERT THOMAS asked the Secretary of State for the Colonies whether he was aware that a commission, appointed by the Lisbon Government, was investigating the causes of sleeping sickness in Mozambique, with special reference to the tsetse fly; and whether our own medical service in

East Africa was collaborating with the Portuguese societies in this matter.—Mr. AMERY replied: My attention has not been drawn to the appointment of this commission, but I will ask my right hon. friend the Secretary of State for Foreign Affairs to make inquiry in the matter. A number of such missions, including several in our own territories, are engaged in the investigation of sleeping sickness problems in Africa, and endeavours are made, through the medium of a subcommittee of the committee of civil research, which deals with this question in its larger aspects, to ensure that effective collaboration is maintained among workers engaged in the study of sleeping sickness.

Local Government Reform.

Mr. HURD asked the Minister of Health if, and when, he would circulate his local government proposals for discussion by the local authorities concerned.—Sir KINGSLEY WOOD replied: Yes, sir. My right hon. friend hopes to circulate a memorandum for discussion by local authorities at an early date.

Mr. HURD asked the Minister of Health if he would give an assurance that the proposed Local Government Bill would await the Report of the Royal Commission on Local Government, now completing its investigations.—Sir KINGSLEY WOOD replied: No, sir. The programme of the Government must proceed on the lines announced by my right hon. friend the Chancellor of the Exchequer. There is, however, a very substantial field of inquiry within the terms of reference of the Royal Commission which is not covered by the Budget proposals, and as at present advised, my right hon. friend the Minister of Health sees no reason to interrupt the satisfactory progress which, as implied in the question, the Commission are making with their labours in that field. My right hon. friend is, however, in consultation with the chairman of the Commission on the position.

Free Choice of Dentist.

Sir JAMES GRANT asked the Minister of Health if he was aware that patients, in Health Insurance Section Approved Society No. 214, Co-operative Wholesale Society, were unable to obtain dental treatment by the dentist of their choice, as the society named refused to pay the scale of fees approved by the Dental Benefit Joint Committee on July 27th, 1926, to operate from Oct. 1st, 1926, to July 6th, 1930; and if he would take any action in the matter.—Mr. CHAMBERLAIN replied: I am aware that the approved society referred to has not recognised the scale of charges approved by the Dental Benefit Joint Committee, and a number of complaints have been received to the effect sugested in the question. The society cannot be considered to be infringing any existing statutory provision by limiting in this manner the members' freedom of choice of dentist, but the whole question on the steps to be taken to secure that insured persons entitled to dental benefit shall be able to obtain satisfactory treatment with proper freedom of choice of dentist, will receive consideration in connexion with the regulations to be made on the subject under the National Health Insurance Bill now before the House.

TUESDAY, MAY 1ST.

Treatment of Venereal Disease in Scotland.

Mr. BUCHANAN asked the Secretary of State for Scotland if he was aware that in certain counties in Scotland no facilities were maintained for the treatment of venereal disease; that 26 towns of a population of 10,000 and over had no clinic; that a number of sufferers were constantly shifting from place to place; and if, in view of the dissatisfaction arising, he would consider the establishing of a committee of inquiry into the whole question.—Sir J. GILMOUR replied: While in certain counties in Scotland there are no centres for the treatment of venereal disease, there is no county in Scotland that is without facilities for such treatment, either at a centre situated within its borders or by arrangements with another local authority. With regard to towns of a population of 10,000 and over the position is as stated in my reply of April 17th. I am aware that a certain number of persons suffering from venereal disease may shift from place to place and, indeed, for one important class of persons who frequently move—viz., sailors—treatment facilities have been specially provided in the principal ports. As I have stated in my previous answer already referred to, the development of venereal disease schemes in all areas is being carefully watched and reviewed by the Scottish Board of Health, and in connexion with the Budget proposals I have under consideration the whole position of local administration in Scotland. I do not think that at present any good purpose would be served by the appointment of a committee of inquiry such as the hon. Member suggests.

Royal Veterinary College, London.

Capt. CROOKSHANK asked the Minister of Agriculture whether his attention had been called to the state of the buildings of the Royal Veterinary College in London, some of which had been condemned by the London County Council, and to the consequent difficulties with which the College was faced in carrying on the work of assisting agriculture through the spread of veterinary science; whether he was aware of the grants made by the Governments of all other European countries towards veterinary science; and whether it was the intention of the Government to make any grants from the Development Fund, the Empire Marketing Board Fund, or from any other funds at their disposal, to assist in rebuilding the Royal Veterinary College in London, and to help the further spread of veterinary knowledge.—Mr. GUINNESS replied: I am well acquainted with the unsatisfactory condition of the buildings of the Royal Veterinary College and of the consequent difficulties under which the College labours; both my predecessor and I have conferred with the governors of the College on the subject. The governors are endeavouring to obtain the necessary funds to rebuild the College, and the Ministry has promised a grant of £35,000 on a £ for £ basis towards the funds which the governors are raising. I have no exact information as to the extent of the State grants made to similar institutions on the continent, but my hon. and gallant friend may rest assured that I appreciate the importance of this subject, and will do everything in my power to assist the College.

Vagrants and the Spread of Small-pox.

Mr. GRUNDY asked the Minister of Health (1) whether, in consequence of the epidemic of small-pox, he had instructed boards of guardians to adhere strictly to the provisions with regard to the disinfection of the vagrants' own clothes; and whether any instructions had been issued by him that these clothes, when taken away at night, should not all be bundled together; and (2) whether he had instructed boards of guardians to adhere strictly to the provisions with regard to the provision of warm baths; and whether any special instructions had been issued that nightshirts and towels should be washed before being given to each separate person.—Sir KINGSLEY WOOD replied: I am sending the hon. Member copies of the circular letters recently issued to boards of guardians in consequence of the epidemic of small-pox. Apart from these no special instructions have been issued, but the guardians are fully aware of the regulations in force, and the officers of my department would, as occasion might require, draw their attention to any necessary improvements in the arrangements of the several casual wards. As at present advised, my right hon. friend sees no ground for further action on his part.

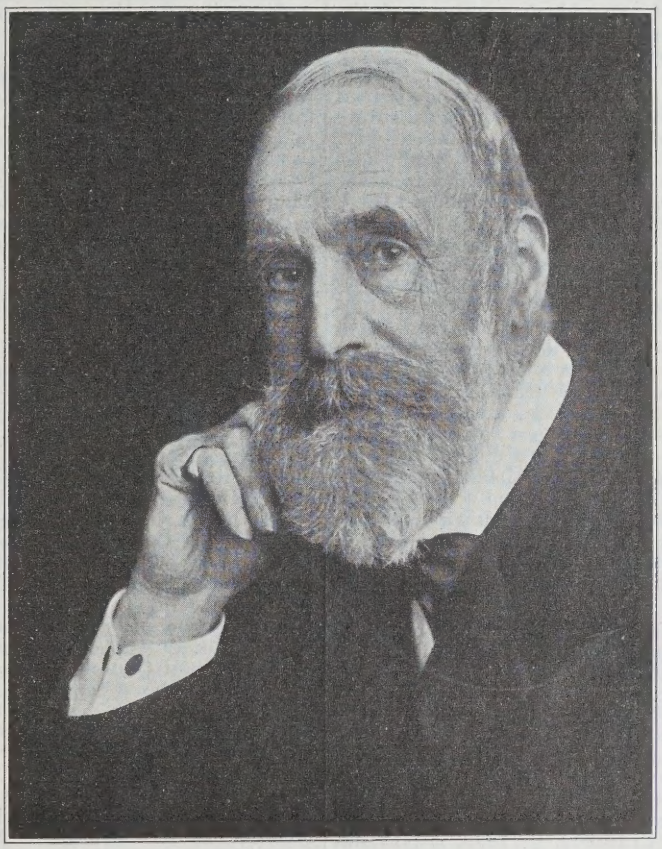
MEDICAL VISIT TO DENMARK.—The summer meeting of the University of Durham Medical Society took the form of a visit to the University and Hospitals of Copenhagen, from March 31st to April 6th. The party consisted of 45 students and members of the staff of the Newcastle Medical School, and the visit was arranged at the invitation of the Danish Students' National Union and the Medical Faculty of the University, with whom (H.B.M.'s Chargé d'Affaires) Mr. Millington Drake and Dr. Vincent Naeser had coöperated. The welcome given to the party was most cordial. On March 31st and April 2nd meetings were held at the Rigshospital. Prof. Knud Faber, in a lecture on the Medical Curriculum in Denmark, said that the course of study lasted seven years, and was always followed by two years' residence in hospital. One of the chief features of the student's career was the weeding-out process which took place in the third year, at the end of the courses in anatomy and physiology, and after some preliminary hospital work. More than a third of the students were rejected at this stage. Prof. Faber also gave a clinical lecture on Undulant Fever due to infection by *Bacillus abortus*, a disease which has been recently recognised as very prevalent in Denmark. Prof. Christen Lundsgaard followed with a lecture on Arterio-sclerosis, including an account of his own research into the subject, and Prof. V. Schaldemose gave a demonstration and operated in the big surgical amphitheatre of the hospital. Prof. C. E. Bloch lectured on Vitamins, showing cases of xerophthalmia and describing an epidemic of this deficiency disease in Denmark in 1918; whilst Prof. A. Krogh gave an address on Capillary Physiology, illustrated by the cinematograph. The remaining days were devoted to Prof. S. Monrad's Hospital, the Bispebjerg Hospital, the Finsen Institute, and the Serum Institute, where Dr. Thorvald Madsen received the party and gave a lecture. An unusual meeting was held on the outward journey on the S.S. *Arcturus* when Dr. J. C. Spence, the president, took the chair, and Mr. Rutherford introduced a discussion on Sea Sickness in which Captain Hjelt and many other speakers described their experiences and theories.

Obituary.

SIR WILLIAM CHURCH, BART., K.C.B.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

WE regret deeply to record the death on Friday st, April 27th, of Sir William Selby Church, which curred at his country house, Woodside, Hatfield, the ninety-first year of his age. He was a fine ponent of medicine, a judicious counsellor in various rections where the developments of science and the blic and professional interests were connected, and magistrate and county councillor brought all this pacity of judgment and impartiality to the conduct his country's airs. His quali- s of wisdom, firm- ss, and fairness d gained for him e high regard of all er more than half century of steady assuming work. William Selby urch, truly a Vic- ian in that he as born a few nths after the cession of the great ueen, was the ond son of John urch, also of odside, Hatfield, his wife Isabella, e daughter of orge Selby, of vizell House, rthumberland. He s educated at rrow, where he ained to a high ce in the school, ile becoming one the prominent ng cricketers of generation, for represented rrow at the ional game from 53 to 1856, being tain of the eleven the last year. oceeding from rrow to Univer- y College, Oxford, obtained a first ss in the natural ence schools, and rtly afterwards s appointed Lee ader in Anatomy, a university post which ried with it a studentship of Christchurch, and this society he was a Fellow for the nine years owing his graduation. Deciding to enter the dical profession, he joined the school of St. Bartholo- w's Hospital, and after qualification as L.R.C.P., s appointed lecturer in the school in comparative tomy. He graduated at Oxford in medicine in 4, and was appointed assistant physician to the pital in 1867, among his senior colleagues on the ff being Savory, Paget, Holden, Farre, and Southey. 1868 he proceeded to the M.D. degree at Oxford, l was elected F.R.C.P. Lond. in 1870. In the tter of obtaining quick charge of beds at S. Bartholomew's Hospital Church was fortunate, in his case the protracted delay which marked the eer of several of the distinguished physicians who owed him upon the staff was not incurred, and in 4 he became full physician to the hospital, a ition which he enjoyed for 28 years before retirement under the age rule, when he was appointed consulting physician. He was consequently associated as assistant, full, and consulting physician with St. Bartholomew's for over 60 years, and, save for a brief period of office at the Victoria Park Hospital, he served that charity only as a member of the honorary staff. As a physician and as a teacher he was systematic, diligent, and thorough, but a reserved nature, or rather, perhaps, manner, led to his actual instruction being more appreciated by those closely connected with him, as clerk or house officer, than by the students who attended his formal lectures and demonstrations. He was insistent upon the value of accurate notetaking and of regular attendance at autopsies.



SIR WILLIAM CHURCH.

Photograph by Elliott & Fry.

Dr. Morley Fletcher, senior physician to St. Bartholomew's Hospital, sends us the following estimate of Sir William Church, which gives an excellent picture of the dead leader. He writes: "Sir William Church was no longer on the active staff of St. Bartholomew's Hospital when I was appointed assistant physician, but I had been associated with him for some years as a member of the teaching staff and later as medical registrar. My first meeting with him was as one of his clinical clerks and two years later I was his house physician, and I feel that I owe much to his fine clinical teaching. He was not a man of many words and was by no means discursive at the bedside, but if asked questions he would respond and discourse freely on the point under discussion. Perhaps the students were inclined to be overawed by his commanding presence and his somewhat brusque manner, and I think he was at his best with his house physicians and I have often compared notes with others who held this post under him of whom no less than 46 served under him during his unusual tenure of office as full physician—no less than 28 years. There has been a general agreement among us that he was a wonderful clinical teacher for senior men. His power of diagnosis was remarkable; he abhorred guessing and his opinion on a case was always based on a thorough and careful examination and the diagnosis, when made, was almost invariably correct. He never obtained or took steps to obtain a large practice among the public, but his advice was eagerly sought by and freely given to members of the medical profession. Especially was he a fine morbid anatomist, and for years performed the medical post-mortem examinations at the hospital. The records so carefully drawn up by him are an evidence of his devotion to this important department of medicine. He expected his clinical clerks to be regular in their attendance in the post-mortem room and, in the wards, he would

discuss with them what they had seen there. And it was rare that he should be absent from his rounds in the wards, though it was always recognised that on Derby Day and during Ascot week he would not put in an appearance. The Medical School of the hospital owes much to him; he was chairman of the finance committee for many years, and was instrumental persistently in furthering the interests of the school. To individuals seeking his advice—and many did so—he was indeed a wise counsellor; to those in doubt as to the right course to pursue in some matter of difficulty he would quietly listen and then with sound judgment and in a few words give the desired help. His love of sport, exemplified in his early skill as a cricketer, came out in his proficiency as a skater. It was his delight whenever possible to skate, and generally he could be found skating with members of the skating club at the Toxophilite Club in Regent's Park. He was one of the oldest members of the club and a bold and skilful skater. He kept this sport up until comparatively late in life, enjoying it with the keenness and enthusiasm of a boy. Church will be greatly missed by many whom he has helped with his wise and kindly advice. His absolute sincerity and honesty of purpose were combined with sound judgment and clear-sighted vision, and these qualities rendered him invaluable in the important positions he held during his long and honoured life."

To Dr. Morley Fletcher's estimate there may be added the testimony of an actual though junior colleague of Sir William Church on the hospital staff. "It is impossible," he writes, "to over-estimate the good influence exercised by Church at St. Bartholomew's. There was, as it happened, at the time when he arrived from Oxford, urgent need to provide new buildings for the accommodation both of patients and students, and here he was in the front as an adviser full of wisdom and common sense, always open to reasoned argument, and therefore an admirable colleague and an ideal chairman of a committee. As a physician all his practice was based upon the constant study of morbid anatomy, and a visit to the post-mortem room invariably prefaced his attendance in the wards. He was a first-rate clinician and a sound and patient teacher whose views were always held in the greatest respect by his students and house physicians."

From such personal verdicts upon Church alike as man of science and man of affairs we can understand how he came to be called to the highest positions in his profession, and to discharge the duties finely. At the Royal College of Physicians of London, of which at the time of his death he was the senior Fellow, he had been an examiner on many occasions from 1874 onwards. He was elected on the Council in 1888 and was a Censor in 1890 and 1891; he delivered the Harveian Oration in 1895, became Senior Censor in the following year, and was elected President in 1899, a position which he held for five years, following Sir Samuel Wilks in the chair, and preceding Sir Richard Douglas Powell. His connexion with the Royal Society of Medicine was no less important. He had served as President of the Royal Medical and Chirurgical Society in 1893 and 1894, this term of office corresponding with the unexpired period resulting from the death of Sir Andrew Clark, so that when 14 years later the great amalgamation of the medical societies of the metropolis took place his election as first President was alike a recognition of his outstanding position and a reminiscence of past services. All Church's services to the Royal Society of Medicine were rendered in anxious times, for they followed immediately upon the period when the move was made, through the foresight of John MacAlister, and the generosity of Andrew Clark, from the small premises in Berners-street to the fine house in Hanover-square. In the subsequent establishment at 1, Wimpole-street, as the centre around which are amalgamated the greater number of the metropolitan medical corporations, Church's counsels were in frequent request, and he was president of the Society from 1908 to 1910. We have Sir John MacAlister's testimony that but for Church the amalgamatio the societies might have been deferred for y even if it was bound to come, but, as president o Royal College of Physicians at the time, he arra that a small organising committee of which he a wards became chairman should meet at the Col and from that time forward things proceeded swi

Sir William Church served on the Royal Commis on Vivisection appointed in 1906, that on the and Treatment of the Sick and Wounded in the S African War appointed in 1901, and that on Ars Poisoning appointed in the same year. The re of the Commission on the Care and Treatmen the Sick and Wounded, made its appear the week when Queen Victoria died, and had important decision to make as to whether the me and hospital arrangements during the South Af war had broken down, and whether there was justification for the statements that there had general or widespread neglect of the wounded. report was brief, was signed by all the five missioners, and the impression derived from perusal was that it was able, comprehensive, fair. The suggestions made by Sir William Ch and his colleagues with a view to remedy the de in the Royal Army Medical Corps, as revealed b the Commission, have since been largely follo The Commission on Arsenical Poisoning was a small one, presided over by Lord Kelvin; it appointed to inquire into the outbreak of peripl neuritis in the Manchester hospitals and poo infirmaries, which Dr. E. S. Reynolds and medical men and chemists had attributed to presence of arsenic in beer. The report was si by all six Commissioners and led to recommenda as to improvements in the official control over purity of food, and further recommendations a the proportions of arsenic in food which would held to constitute an offence under the Sale of and Drugs Act.

For King Edward's Hospital Fund for Londo William Church did especially valuable work, over a long period he acted as chairman of Distribution Committee, a position which made the virtual steward of vast charitable donati those who served upon the Committee with him not readily forget the pains which he took to d the allocation of grants in accordance with the recognition of the diversified claims.

Sir William Church wrote little beyond comm cations to the *Transactions of St. Bartholom Hospital*, of which he was for some time the editor, but he was the author of a brief contribu to Allbutt and Rolleston's "System of Medicine collaboration with Prof. W. Bulloch, on rheu fever. This is an excellent piece of writing, certain contributions to debates before the Medical and Chirurgical Society, circulated pamphlets, had the same careful grasp of subjects. But in the Harveian Oration he sh that he had a full and scholarly ability to when the occasion called upon him, for Chu description of the rise of physiology in England a fine literary performance.

The honours that fell to him were many. His University, and those of Glasgow and Manche made him D.Sc., of the University of Durham he D.C.L., he was created baronet in 1901, and rece the K.C.B. in 1902. He married Sybil, daught Mr. C. J. Bigge, of Linden, Northumberland, they had two sons, the elder of whom was k in the recent war, while the younger succeeds t baronetcy.

JAMES ALEXANDER MACDONALD,

M.D., M.Ch. R.U.I., LL.D. Belf.,

CONSULTING PHYSICIAN, TAUNTON AND SOMERSET HOSPI

A MEMBER of the medical profession who have been known to an unusual number of professional colleagues died last week in the p of Dr. J. A. Macdonald, the veteran worker fo cause of medicine through various offices in

tish Medical Association, holding almost every ce. He had been a member of the West Somerset nch Council from 1894 onwards, and had acted as representative for the past 25 years, holding office president of the branch in 1899 and again in 1926. recognition of his work for the profession in the st of England he was elected an associate member he Dorset and West Hants branch. He became a mber of the Central Council in 1906 and soon after- ds was elected chairman of the Representative ly in succession to Sir Victor Horsley. He held office for three years and was then chosen to ceed Mr. Edmund Owen as chairman of Council. retired from that position in June, 1920, after ring for ten arduous and eventful years, which uded the Insurance Bill crisis and the whole iod of the war. He was elected a vice-president he Association at the Belfast annual meeting in 9, held office as president of the Section of Medical iology at the London meeting in 1910, and during Birmingham meeting in 1911 the honorary degree LL.D. Birm. was conferred upon him. The ociation's gold medal of merit was awarded him 1913. In the following year he visited at the uest of the Association the New Zealand, Australian, some of the Far Eastern branches, and he acted in as ambassador of the parent body to Overseas nches when he visited South Africa soon after nquishing the chairmanship of Council. These ts were greatly appreciated by all members of the nches and did much to bind closer together the ociation at home and overseas. During his South ican tour in 1920 the occasion was taken to set foot an appeal for a testimonial fund in recog- on of Macdonald's long and distinguished service, the presentation was made to him during the vcastle annual meeting by Sir Clifford Allbutt, outgoing president. From 1920 onwards donald was chairman of the Journal Committee; was work which made a strong appeal to him, he was admirably equipped for it by tempera- t and experience. His loyalty to the *Journal* its staff was made plain every year when he sented the committee's report to the Annual presentative Meeting.

lacdonald personally exercised great influence by quiet genial demeanour, but his easy-going manner cealed great shrewdness and independence of d, and when his mind was made up to what he ught was right, forcible argument was needed to ke him change his opinion. He was a pillar of ngth to the British Medical Association in difficult es, and the medical profession owes him a great t.

HENRY LOUIS POWELL HULBERT, M.D. CAMB., D.P.H.

r. Hulbert, who died on April 18th at Grasse, he French Maritime Alps, after a long period of cement and ill-health, was in his fifty-seventh r. He was a son of Canon C. A. Hulbert, was n at Slaithwaite (Yorks), educated at Charter- se and Trinity College, Cambridge, entering St. tholomew's Hospital for his medical studies. er qualifying in 1901, he remained for a year at hospital as house physician, and prepared himself the School Medical Service by experience of rs at the Stockwell Hospital (M.A.B.) and Croydon sation Hospital, and of administration in an Essex l district and in Manchester. In 1906 he was ointed school medical officer to the county of nthamptonshire. His work there brought him close contact with teachers for whom he developed esteem which was reciprocated by them, and in will he made a substantial bequest to the county cation committee to be used for the benefit of school-children of the area. In 1911 recurring cks of pleurisy obliged him to winter in the Swiss s, and the enforced rest gave him the opportunity vriting the life of his uncle, Sir F. S. Powell, t., the Parliamentary sanitarian, a book which cts something of the mind of the biographer. During the late war he returned to active medical work, becoming divisional sanitary officer of the 61st (S.M.) Territorial Division, and later commanding the 43rd (Lowland) Sanitary Section, but unfortunately his health again compelled his retirement from practice. Leisure, however, meant for Hulbert the continuance of his earlier study of Latin and Greek literature, and of Plato in particular. He was much interested in art and had many artists among his friends, besides being himself an excellent colourist and water-colour painter. Loyalty to his school and college kept him in touch with a large circle of his former associates, who valued the old-fashioned charm and literary flavour of his letters. Since his retirement he lived a very quiet life with his wife, a daughter of the late Mr. Waring Bardsley, at their villa at Grasse, where he bore with philosophical calm the increasing discomforts of declining health. His death will come as a reminder to his old friends of a broad and smiling figure which embodied a spirit of equal breadth and humour.

WE have to record the death of RICHARD FRANCIS LISTER, M.R.C.S. Eng., who was drowned on April 23rd whilst yachting off Cherbourg. A son of the late Lieut.-Colonel Arthur Hugh Lister, R.A.M.C. (T.), C.M.G., he was educated at Lancing and at Trinity College, Cambridge. Two and a half years ago he entered the London Hospital, where his younger brother is a student, and in January he completed his medical course by taking the Conjoint qualification. At the end of March he became clinical assistant in the ear, nose, and throat department of the hospital, and he was to have returned there at the end of a short holiday at sea. He was a keen member of the United Hospitals Sailing Club.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the Committee 49 cases were considered and £659 voted to 41 applicants. Since the beginning of the year £2862 has been made in grants to urgent cases of distress. The demands for help increase and subscriptions are very urgently needed; they should be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, London, W. 1. The following are notes on a few of the cases relieved at the last meeting:—

M.D. At the age of 76, with his wife blind and suffering from cancer, and without a penny saved, the applicant suddenly found himself out of employment. For the last seven years he had been an assistant in a practice, but owing to the death of the principal, and the sale of the practice, the work had terminated. No provision had been made for old age or unemployment, as ever since 1912 the doctor had not been able to earn more than £300 a year, and it had been impossible to save on such an income. Before then he had been in regular practice and had educated two sons for the medical profession. This had naturally been a strain on his income at that time. The eldest son died during the war and the youngest is delicate and is struggling to keep himself going. In addition, there are two daughters to be educated. The doctor is willing and only too anxious to work, but at the age of 76 it is impossible to find employment. He will apply for the old-age pension. Voted £40.

Widow, aged 69, of L.R.C.P. The applicant's husband died early this year after a long illness, leaving her penniless. He was employed as a salaried assistant in a practice, and on his decease the widow received only £35, being the salary due to the date of his death. The sale of the furniture and a small gift of £20 has brought her total capital up to £150. She is now living with her niece, who is the wife of a clergyman who has only his stipend to depend on, and they are therefore unable to support her. Voted £36.

Widow, aged 77, of M.R.C.S. Since the death of her husband in 1884 the applicant has maintained herself as companion-housekeeper. Now at the age of 77 she is unfit for work and her only income is the old-age pension of £26 a year. Voted £36.

DONATIONS AND BEQUESTS.—William Vaughan Roberts, L.R.C.P., L.R.C.S., Blaenau Festiniog, after other bequests, left £1000 to provide a scholarship tenable at either Aberystwyth or Bangor College, and the ultimate residue to the Blaenau and Festiniog and District War Memorial Hospital.—The Manchester Royal Infirmary has received a legacy of £2646 from the late Miss Annie Latham and £1327 from the late Miss J. M. Jackson.—The Royal Manchester Children's Hospital has received £1000 from the executors of the late John G. Litton.—The Rev. William John Pinckney, St. Leonards-on-Sea, on the death of his wife, gave £1000 each to the Alexandra Home for Chronic Invalids, St. Leonards-on-Sea, the Buchanan Hospital, St. Leonards-on-Sea, and £700 to the Borough of Hastings District Nursing Association.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At a recent examination the following candidates were approved :—

DIPLOMA IN MEDICAL RADIOLOGY AND ELECTROLOGY.

Part I.—Oliver Chance, S. J. Dikshit, F. J. Farr, C. W. S. Fernando, N. P. Henderson, S. A. Jabbar, Leila K. Keatinge, D. F. Lawson, W. P. Philip, H. C. Pillsbury, B. K. Roy, Tokue Takahashi, R. N. Tandon, E. Thorpe, E. J. E. Topham, A. K. S. Venkatachala, J. D. H. Wearing, and F. G. Wood.

Part II.—Nessim Abu-Saif, J. H. Baird, J. J. N. Daniels, W. E. Donaldson, Frances Dooley, Emily L. Franklin, J. F. Grant, S. A. Jabbar, S. L. Mucklow, R. G. Murray, S. D. S. Park, Mostafa Ragheb, W. G. Rich, H. T. Rymer, C. F. O. White, and John Wilkie.

UNIVERSITY OF LONDON.—A course of four lectures on the Human Kidney and the Physiological Study of Human Urine will be given by Prof. J. B. Leathes, F.R.S., at Guy's Hospital Medical School, St. Thomas's-street, S.E., on May 15th, 16th, 22nd, and 23rd, at 5 P.M. Prof. M. S. Pembrey, F.R.S., will take the chair at the first lecture. Admission is free, without ticket.

At a recent examination at the University of London the following candidates were successful :—

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

With Special Knowledge of Psychiatry.—A. W. H. Smith and F. O. Walker.

With Special Knowledge of Mental Deficiency.—N. H. M. Burke and J. N. Jacobson.

SOCIETY OF APOTHECARIES OF LONDON.—At recent examinations the following candidates were successful in the undermentioned subjects :—

Surgery.—G. E. Bent, Manchester ; A. R. D'Abreu, Leeds ; D. Jacobson, St. Bart.'s Hosp. ; D. K. Reynolds, King's College Hosp. ; I. O. B. Shirley, St. Thomas's Hosp. ; and A. E. Vawser, London Hosp.

Medicine.—H. B. Blaker and H. T. Ince, St. Mary's Hosp. ; H. T. Rylance, Middlesex Hosp. ; and W. Ziv, Bale and London Hosp.

Forensic Medicine.—B. Elliott, Durham ; J. H. Johnston, St. Bart.'s Hosp. ; N. H. Kettlewell, Bristol and Middlesex Hosp. ; and E. A. Lipkin, Liverpool.

Midwifery.—A. E. Gibbs, London Hosp. ; and C. C. F. White, Guy's Hosp.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery and midwifery : B. Elliott, H. T. Ince, D. Jacobson, D. K. Reynolds, H. T. Rylance, and I. O. B. Shirley.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—An ordinary comitia of the College was held on April 26th with Sir John Rose Bradford, the President, in the chair. The following Members of the College were elected Fellows :—

Carlton Oldfield, Newman Neild, Vincent Sutherland Hodson, Sydney Arthur Owen, John Bright Banister, Laurence Ball, Rodolf Charles Wingfield, William Willis Dalziel Thomson, Thomas Beaton, Wilfred John Pearson, Neil Hamilton Fairley, Geoffrey Marshall, Ernest Basil Verney.

Nominated by the Council under by-law XXXVIII (*b*):—

Edward Mellanby.

The following candidates were elected Members of the College :—

Harold Awrounin, Douglas Charles Beaumont, Mona Margaret Blanch, The Hon. Olive Burton Buckley, George Campbell, Bernard Maule Clark, Arthur Edgar De Chazal, Ewen Thomas Taylor Downie, James Gilbert Falconer, Kenneth Alexander Hamilton, Tom Allistair Falconer Heale, Leslie Charles Hill, Arthur Sturgess Hollins, Thomas Cecil Hunt, Bertram Humphreys Jones, Abdulla Karmally, Samuel Maurice Katz, Alice Margaret Craig Macpherson, John Kempson Maddox, William Hotson Palmer, Jean Lilian Smith, and Richard Robertson Trail.

The report of the Committee of Management of the Examining Board in England of the Royal College of Physicians of London and the Royal College of Surgeons of England, that it was desirable and practicable to hold a clinical examination in obstetrics and gynæcology in connexion with the final examination in midwifery for the diplomas of L.R.C.P., M.R.C.S., was adopted.

A report of the Committee of Management, recommending that the College should conform to the practice of other licensing bodies with regard to the period at which the professional curriculum was to be regarded as beginning, was adopted.

Licences to practise were conferred upon 156 candidates (131 men and 25 women) who have passed the Final Examination in Medicine, Surgery, and Midwifery of the Conjoint Board and have complied with the necessary by-laws of the College. The following are the names and medical schools of the successful candidates :—

M. E. Albury, Cambridge and St. Thomas's ; B. A. J. Arthure, Birmingham and Charing Cross ; R. E. Artrick, Univ. College ; Mabel A. Baker, Royal Free ; Ellen M. Barnes, Univ. College ; N. R. Barrett, Cambridge and St. Thoma Charlotte Belinky-Raginsky, Charing Cross ; A. D Bell, Oxford and St. Thomas's ; Ruth Bocock, R Free ; H. H. Boyden, St. Bart.'s ; J. M. Bucha Middlesex ; W. Buckley, Cambridge and St. Bar F. Bush, Cambridge and Univ. College ; G. Camp St. Thomas's ; G. C. Campbell, Guy's ; A. G. Carmich Middlesex ; R. E. P. Cohen, Birmingham ; E. T. C beare, Guy's ; N. E. Cook, St. Bart.'s ; A. D. W. Co S. Mary's ; B. W. Cooke, St. Bart.'s ; R. W. Coo Middlesex ; T. V. Cooper, Westminster ; E. Cor London ; J. E. Crooks, Guy's ; A. Dala, Liverp C. H. Dale, St. Bart.'s ; T. C. Dance, Birmingham ; T Davie, Cape and Liverpool ; Mona C. Davies, Cardiff Charing Cross ; R. G. de Kock, Cape and Guy's ; C Dobson, Durham ; W. J. G. Drake-Lee, Cambridge St. Thomas's ; L. L. Eksteen, Liverpool ; W. A. Ellis Cambridge and St. Bart.'s ; C. Emery, Univ. Coll R. B. Floyd, Cambridge and Machester ; M. Fran St. George's ; J. P. Fraulo, Guy's ; G. H. Gange, C bridge and Middlesex ; A. P. Gaston, St. Bart.'s ; Y Gimpelson, St. Mary's ; P. S. Gitlin, Guy's ; J. C. Gor Cambridge and St. Bart.'s ; S. E. Goulstine, Durh Tatiana Gourlande, Moscow and St. Mary's ; G. N. G St. George's ; A. E. Handousa, Cairo and St. Bar H. N. W. Harley, Guy's ; G. A. S. Harris, St. Bar M. R. W. Hart, Madras and St. Bart.'s ; J. S. Hensr Cambridge and St. Bart.'s ; A. N. Hobbs, St. Bar R. Hodkinson, Cambridge and St. George's ; L. Hoffr St. Bart.'s ; E. J. Horn, London ; Kathleen Horne, Le M. C. Hounsfield, Cambridge and St. Bart.'s ; Murie Hulke, Univ. College ; T. A. A. Hunter, Cambridge London ; J. G. H. Ince, Univ. College ; S. D. Isa Cambridge and Birmingham ; R. A. Isenstein, Adel and London ; Florence H. Johnson, Oxford and U Coll. ; Olive M. G. Jones and Emma J. King, Royal F H. N. Knox, King's Coll. ; L. B. Langmead, Guy's ; I Lawrence, Cardiff and St. Bart.'s ; J. M. Lees, Cambr and St. Bart.'s ; L. H. Lerman, Durham and Middle Marjorie H. Lester, Royal Free ; F. W. Linton-B Cambridge and St. Bart.'s ; Olive T. Lloyd, Cambridge Westminster ; A. J. Lomax, Manchester and Univ. C A. Maberley, Cambridge and St. Thomas's ; G. W McDonnell, London ; S. McGladdery and K. W. Mac St. Bart.'s ; R. C. Mahajan, London ; H. H. Mahm Middlesex ; G. D. Malhoutra, St. Thomas's ; T. E. Ma St. Bart.'s ; E. T. Mankabadi, Cairo and Lond F. Mansour, Cairo and Charing Cross ; Mary L. Ma Charing Cross ; W. E. Mashiter, St. Thomas's ; N. Matheson, Middlesex ; J. I. Mathias, Cardiff and U College ; Olive S. May, King's Coll. ; G. van R. Most Guy's ; N. S. Narasimhan, Bombay and Guy's ; R. New Manchester ; J. W. Notley, Birmingham ; Joan M. Olda Royal Free ; C. W. Olsen, St. Bart.'s ; G. Packham, Gu E. A. E. Palmer, St. Bart.'s ; Irene A. Papenfus, U College ; D. N. Parfitt, Cardiff ; Mary E. Pease, U College ; L. S. Penrose, St. Thomas's ; W. P. Phil Cardiff ; R. E. M. Pilcher, Cambridge and St. Thoma N. E. Pitt and R. E. Rix, Guy's ; L. G. R. Roberts M. Roberts, Liverpool ; R. W. N. Robins, St. Thoma D. A. Rolfe, Birmingham ; M. C. Rous, Cape and Lond F. G. V. Scovell, St. Bart.'s ; J. Seidenberg, Middles A. Shedrow, Beirut and St. Bart.'s ; R. She St. Thomas's ; L. Shillito, Cambridge and St. Thoma M. Shlosberg, Manchester ; H. N. Skelton, Sheffi D. R. E. Smith, London ; E. J. J. Smith, St. Bart B. Spencer, St. Thomas's ; V. P. Squire, Leeds ; H. Stev St. Bart.'s ; H. H. Stewart, St. Thomas's ; G. S. Sto Cambridge and St. Thomas's ; K. G. Sugden, St. Bart E. E. Swaby, Westminster ; Ivy E. Tanner, Royal F I. C. C. Tchaperoff, St. Thomas's ; H. Temkin, U College ; H. S. Thomas, Middlesex ; J. E. Thomas, Card J. P. Thyne, King's Coll. ; Elsie J. Todd-White, R Free ; R. D. M. Townend, Univ. College ; W. R. Langenberg, Ceylon and Middlesex ; J. F. Varley, Bart.'s ; J. Vaughan-Bradley, St. Thomas's ; M. Wadia, Bombay ; W. H. S. Wallace and G. A. B. Walt St. Thomas's ; F. S. Warner, Guy's ; A. R. Waterho Leeds ; H. G. Wells, Westminster ; Eleanor L. C. W Univ. College ; Alice E. S. Wharton, Royal Free ; A Wilkes, Charing Cross ; F. Williams, London ; J. C. F Williamson, St. Bart.'s ; T. G. Willis, London ; J. Wood, Sheffield ; E. C. Woodhead, Cape and Gu Dorothy L. Woodroff, King's Coll. ; Janet D. E. Yo Royal Free ; R. A. Zeitlin and J. S. Zidel, St. Bart and S. Zuckerman, Univ. College.

THE LATE DR. W. P. BRIGGS.—Dr. William Pe Briggs, who died on April 20th, after a short illness, practised at Aspatria, in Cumberland, for nearly 50 ye He took the Scottish Conjoint diploma in 1877, hav studied medicine at the University of Glasgow and Anderson College. After a house appointment at Glasgow Royal Infirmary, he went into partnership w the late Dr. William Hodgson, and as soon as the Aspa Urban Council was created, he became its medical offi of health. A colleague writes of him that he had " enthusiasm that never waned, a cheerfulness that seld shrank, an interest in life that was always present. ungrudging devotion to his profession, and his own s respect, made him loved and respected, and he will mourned as a man who carried out private and pu duties conscientiously, scrupulously, independently, fearlessly." Dr. Briggs was 72 years of age, and survived by a widow and the eldest son of her f marriage.

Dr. Isaac Alexander Davidson, of Antrim-road, fast, is, we are glad to be able to state, alive and in the ive practice of his specialty. The notice of his death ich appeared in THE LANCET of April 14th was based upon orrect information received from our local correspondent, led by the similarity between the names of Dr. I. A. vidson, ophthalmic surgeon, and his cousin, Dr. Thomas Davidson, a general practitioner, of 13, Clifton-street, fast, whose death occurred on March 28th. We desire give every possible publicity to the correction.

CHADWICK PUBLIC LECTURE.—A lecture on light, Natural and Artificial, and its Use in Modern licine, illustrated by lantern slides, will be given by Major lter Elliot, M.P., on Tuesday, May 15th, at 8.15 P.M., he House of the British Medical Association, Tavistock-are, London, W.C.

ABERDEEN UNIVERSITY CLUB, LONDON.—The enty-ninth half-yearly dinner will be held at the Trocadero taurant on Thursday, May 17th. The secretary's address , Addison-gardens, W. 14.

'CARNIVAL BEDS."—Sir Percival Bower has veiled tablets above three beds in the Queen's Hospital, mingham, recording that they were endowed by the zens of Birmingham with money raised by the University dents' Carnival. These carnivals have produced a total £25,000 since 1922.

BRITISH INSTITUTE OF PHILOSOPHICAL STUDIES.—ourse of six lectures on Mind in Nature is being given 5.30 P.M., on Tuesdays in May and on June 5th, by f. C. Lloyd Morgan, F.R.S. A course of four lectures the Philosophy of Religion will be given by Prof. Clement J. Webb, on Wednesdays, May 23rd, 30th, June 6th, and h, at 4.45 P.M. Both courses will be given at the Univer- of London Club, 21, Gower-street, W.C.1. Syllabuses l particulars may be had from the Director of Studies, Kingsway, London, W.C. 2.

ROYAL SOCIETY OF MEDICINE.—It has been decided widen the scope of the Associateship. A few years ago Associateship was instituted in order to encourage able juniors in the profession to take advantage of the vileges of this Society, and the position was at first ricted to qualified members of the medical profession. a general meeting of Fellows, recently held, has amed the by-law in regard to Associateship as follows:—

The Council shall be and is hereby empowered from time ime and at its sole discretion to elect medical, dental, and erinary practitioners (whether British or otherwise) who hin five years of their first professional qualification apply election, to be non-corporate Associates of the Society."

s means that promising young odontologists and erinary surgeons can now apply for Associateship and lected by the Council of the Society if they are approved. should be added that Associateship is only available to iors within the first five years of their qualification, as finishes automatically at the end of that time. The ociate has the right to attend scientific meetings and to the library, though he may borrow one book at a time y, and when he has paid three annual subscriptions may, lected to the Fellowship, be admitted without payment ntrance fee.

WORK OF THE NATIONAL BABY WEEK COUNCIL.—e display of moving pictures occupies an increasing re of the National Baby Week Council's activities. The rly issued annual report mentions eight films which were l in demand during the year. The most recent of these "Black Lake Home," depicting the convalescent home the wives and babies of professional men which has its s in Sir James Barrie's old home at Farnham, and "Who to blame?"—a propaganda film. Health plays and tern lectures were also a feature of the year's work. pecial film display was staged at the annual conference, n the whole evening's programme consisted of health s, and some 600 people attended. The points selected the Council and recommended for special attention in s year's local and national programmes are: (1) immunisa-n as a means of protecting young children against ase; (2) prevention of maternal mortality; (3) new elopments in maternity and child welfare work. Baby ek is to be celebrated as usual during the first week in y, and a conference will be held on July 4th, 5th, and 6th, n the following subjects are to be discussed: The ative Value of Intensive Methods Employed for the luction of Infant Mortality; the Causes and Prevention Maternal Mortality; the Requirements of the Unmarried ther and Her Child; the Place of Antenatal Care in Reduction of Maternal Mortality. This is to be followed an international child welfare congress to be held from y 8th to 12th in Paris.

GLASGOW UNIVERSITY CLUB, LONDON.—The annual summer dinner of this club will be held at the Trocadero Restaurant, Piccadilly, W., on Friday, May 25th, at 7.15 P.M. for 7.30 P.M. Sir Donald MacAlister will preside. Any Glasgow University men who, though not members of the club, desire to attend, should communicate with the hon. secretaries at 62, Harley House, N.W. 1.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—The Morison Lectures will be delivered by Dr. John Carswell at the College, on Monday, Wednesday, and Friday, May 7th, 9th, and 11th, at 5 P.M. His subject will be Psychology and Medicine.

MEDICAL SOCIETY OF LONDON.—The annual general meeting and conversazione, arranged for Monday, May 14th, has been postponed to Monday, May 21st. At 9 P.M. on this evening Sir Archibald Garrod will deliver an oration entitled Lessons on Rare Maladies.

TAVISTOCK-SQUARE CLINIC.—The annual general meeting of the Tavistock-square Clinic for Functional Nervous Disorders will be held in the form of a luncheon at the Hotel Russell, Russell-square, London, W.C., on Monday, May 21st, at 1 P.M. for 1.15 P.M.

ST. CYRES LECTURE.—The second St. Cyres Lecture of the National Hospital for Diseases of the Heart will be delivered by Prof. K. F. Wenckebach at the Barnes Hall of the Royal Society of Medicine, on Wednesday, May 16th, at 4.30 P.M. His subject will be the Heart and Circulation in Tropical Avitaminosis (Beri-beri). Tickets may be obtained from the secretary of the hospital, Westmoreland-street, London, W. 1.

HULL ROYAL INFIRMARY.—The annual report of this institution states that last year it treated just under 36,000 patients, or more than 10 per cent. of the population of the city. In addition the casualties exceeded 18,000 in number.

SHEFFIELD ROYAL HOSPITAL.—The board of management reports that the average daily cost of an in-patient last year was 7*s.* 4*d.*, a reduction of 6*d.* upon the preceding year. The yearly cost per occupied bed has fallen from £142 16*s.* 3*d.* to £133 5*s.*

FIRE AT WINDSOR HOSPITAL.—A fire which originated in a servants' room last week destroyed two wards of the King Edward VII. Hospital at Windsor. Fortunately it broke out in the afternoon and the 120 patients, six of whom had been operated upon earlier in the day, were removed safely. The hospital was rebuilt in 1909.

MIDDLESEX CANCER HOSPITAL.—During the past year 564 patients were treated, as compared with 621 in 1926, and they were given longer treatment. One-half of the beds in the cancer wing of Middlesex Hospital are now devoted to operable cases.

DEATH OF DR. J. L. RANKINE.—John Lawson Rankine, who died on April 19th, had for many years been medical officer of health for the rural district of Longtown in Cumberland, and held other appointments in the neighbourhood. He studied medicine at Guy's Hospital and took his M.R.C.S. Eng. in 1907, subsequently serving as house surgeon at the Dumfries and Galloway Royal Infirmary, and as clinical assistant in the Royal Eye Hospital, Southwark. After private practice at Mallsburn, near Bewcastle on the Border, and at Kirklinton, he took over the practice of Dr. R. E. Marwick, at Longtown. During the war he held a captain's commission in the Royal Army Medical Corps and served in the East. He leaves a widow with a son and a daughter.

WOMEN IN THE SERVICE OF HOSPITALS.—A conference, convened by the National Union of Societies for Equal Citizenship, will be held on May 8th, to discuss three aspects of this subject, notably (1) Opportunities for training of women medical students. (2) The appointment of women to paid and honorary medical posts in hospitals, and (3) the appointment of women on boards or committees of management of hospitals (including mental hospitals). The speakers at the conference, which will be held at Mary Sumner House, 24, Tufton-street, Westminster, from 2.30 till 6 P.M., will include Dr. Margaret Emslie, Miss C. Fulford (chairman, Fulham Board of Guardians), Dr. Graham Little, M.P., and Miss Eleanor F. Rathbone. Visitors' tickets (price 1*s.*), and all further particulars can be obtained on application to the N.U.S.E.C., 15, Dean's Yard, London, S.W. 1.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdrs. E. L. Markham to *Conquest* and G. V. Hobbs to *Cardiff*.

Surg. Lt. C. B. Nicholson to *Victory*.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lt. W. McO. Macgregor is confirmed in his rank.

Surg. Lt. G. McCoull to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capts. G. J. McGorty and J. F. W. Meenan to be Majs. (Prov.).

ARMY RESERVE OF OFFICERS.

Lt.-Cols. H. E. J. A. Howley and A. F. Carlyon, having attained the age limit of liability to recall, cease to belong to the Res. of Offs.

TERRITORIAL ARMY.

Capt. W. Leslie to be Maj.

Lt. C. C. P. Anning is restd. to the estabt.

J. A. Kerr to be Lt.

ROYAL AIR FORCE.

P. B. L. Potter is granted a short service commission as a Flying Officer for three years on the Active List, and is seconded for duty with the Princess Alice Memorial Hospital, Eastbourne.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. L. Game ceases to be employed with the Regular Air Force.

INDIAN MEDICAL SERVICE.

The undermentioned officers retire: Col. Chintaman Ramchandra Bakhle, Col. Krishnaji Vishnoo Kukday, and Lt.-Col. E. L. Ward.

Temp. Capt. S. V. P. Pill relinquishes his temp. commn. and retains his rank.

The following have been selected by the Secretary of State for India for appointment on probation to permanent commissions in the Indian Medical Service: Mr. S. Hartley, Mr. J. Acheson, Mr. E. A. O'Connor, Mr. V. T. J. Lynch, Mr. J. P. J. Little, Mr. P. L. O'Neill, and Mr. D. K. Crawford.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 21ST, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 326 (last week 321); scarlet fever, 1361; diphtheria, 1049; enteric fever, 56; pneumonia, 1311; puerperal fever, 45; puerperal pyrexia, 102; cerebro-spinal fever, 4; acute poliomyelitis, 4; acute polio-encephalitis, 3; encephalitis lethargica, 30; continued fever, 2; dysentery, 39; ophthalmia neonatorum, 82. No case of cholera, plague, or typhus fever was notified during the week.

Cases of small-pox were notified from the following 24 counties: London, 5; Bedford, 5; Berks, 1; Chester, 2; Derby, 15; Durham, 65; Gloucester, 10; Hertford, 1; Kent, 2; Lancaster, 43; Leicester, 1; Lincoln, parts of Lindsey, 4; Middlesex, 1; Norfolk, 3; Northumberland, 16; Nottingham, 10; Somerset, 2; Stafford, 10; Suffolk East, 1; Warwick, 1; Yorks, North Riding, 4; West Riding, 75; Glamorgan, 26; Monmouth, 23.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on April 24th–25th was as follows: Small-pox, 11 under treatment, 2 under observation; scarlet fever, 1544; diphtheria, 2197; enteric fever, 35; measles, 1485; whooping-cough, 145; puerperal fever, 15 (plus 14 babies); encephalitis lethargica, 66; "other diseases," 26. At St. Margaret's Hospital there were 15 cases of marasmus and 11 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 3 (1) from enteric fever, 148 (70) from measles, 5 (2) from scarlet fever, 40 (11) from whooping-cough, 51 (15) from diphtheria, 38 (4) from diarrhœa and enteritis under two years, and 95 (10) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Liverpool and Wakefield, 1 each. Of the 48 fatal cases of measles outside London, 7 were reported from Sheffi 4 from Plymouth, 3 each from Tottenham, Edmonton, Salford, while the figures in Edinburgh, Glasgow, Dublin for the same week were 4, 3, and 4. Of the 29 f cases of whooping-cough outside London 7 were repor from Liverpool and 4 from Birmingham.

The number of stillbirths registered during the w was 302 in the great towns, including 65 in London

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, May 7th.—8.30 P.M., SOCIAL EVENING. Fell and guests will be received in the Library by President and Lady Berry. 9.15 P.M., Mr. P. Tustin will give an illustrated address entitled Mil From Cow to Consumer. A number of exhib kindly lent by the lecturer, will be on view. M and light refreshments.
TUESDAY.—8.30 P.M., PSYCHIATRY. Annual Gen Meeting.
WEDNESDAY.—4.45 P.M., SURGERY: SUBSECTION PROCTOLOGY. Annual General Meeting. 5 P Discussion on the Early Diagnosis of Carcinoma of Rectum and Colon, to be opened by Sir William Courcy Wheeler (Surgery), Dr. Graham Hodg (Radiology), Dr. Cuthbert Dukes (Pathology). Ernest Miles will also speak.
THURSDAY.—8.30 P.M., NEUROLOGY. Annual Gen Meeting, to be followed by Pathological Meeting.
FRIDAY.—5.30 P.M., CLINICAL. (Cases at 5 P.M.) Dr. Don Hunter: (1) Case of Post-Operative Tetany. M. A. Cassidy and Mr. C. Max Page: (2) Case Carotid Body Tumour Previously Shown with Tum After Excision. Dr. F. Halls Dally: (3 and Two Cases of Pulmonary Tuberculosis Treated Thoracoplasty. (5) Case of Total Transposition Viscera. Dr. Adolphe Abrahams: (6 and 7) Two Ca of Thrombopenia in Brothers. Dr. Parsons-Smi (8) Case of Obesity. (9) Case of Hypothyroid Heart
SATURDAY AND SUNDAY.—BALNEOLOGY. Annual Provin Meeting at Bath.

HARVEIAN SOCIETY OF LONDON.
THURSDAY, May 10th.—4.30 P.M., Clinical Meeting Paddington Infirmary, Harrow-road, W.

INSTITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, May 9th.—3.30 P.M., Prof. F. Langmea Developed Heart Disease.

LEEDS AND WEST RIDING MEDICO-CHIRURGIC SOCIETY POST-GRADUATE COURSE ON CANCER.
WEDNESDAY, May 9th.—3.30 P.M. (in the Medical Sch Leeds), Mr. G. Grey Turner: Cancer of the Rectum

ROYAL SOCIETY OF ARTS, John-street, Adelphi, W.C.
WEDNESDAY, May 9th.—8 P.M., Captain Reginald Willing Lane: The Sterilisation of Milk.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

CONFERENCE ON RHEUMATIC DISEASES: The Pu Room, Bath.
THURSDAY, May 10th.—Presidential Address by Sir Geo Newman. First session (Social Aspects).
FRIDAY.—Second Session (Causation) and Third Sess (Treatment).

WEST LONDON HOSPITAL POST-GRADUATE COLLEG Hammersmith-road, W.
MONDAY, May 7th.—10 A.M., Dr. Dowling: Skin Depa ment. 2 P.M., Mr. Addison: Surgical Wards. 2 P. Dr. Trevor Davies: Gynæcological Department.
TUESDAY.—10 A.M., Medical Registrar: Medical War 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Hambleen Thomas: Throat, Nose, and Ear Depa ment.
WEDNESDAY.—10 A.M., Dr. Burnford: Medical War 2 P.M., Dr. Scott Pinchin: Medical Out-patien 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurologi Department. 2 P.M., Mr. Simmonds: Surgical O patients. 2 P.M., Mr. MacDonald: Genito-Urina Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical War 12 noon, Dr. Ironside: Clinical Demonstrati 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Depa ment.
SATURDAY.—9.30 A.M., Dr. Burnford; Bacterial Thera Department. 10 A.M., Dr. Owen: Children's Medi Out-patients.
TUESDAY, May 8th and 11th.—4.30 P.M., Special Lectur Mr. Sinclair: Gastric and Duodenal Ulceration.
Daily, 10 A.M. to 5 P.M., SATURDAYS, 10 A.M. to 1 P. In-patients, Out-patients, and Special Departmen Anæsthetic and Operative Surgery Courses.

NORTH-EAST LONDON POST-GRADUATE COLLEG Prince of Wales's General Hospital, Tottenham.
MONDAY, May 7th.—2.30 to 5 P.M., Medical, Surgical, a Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, N and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and E Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Monday and Friday, at 2.30 P.M., there will also be demonstrations of Surgical and Medical Cases by Mr. Ralph Coyte and Dr. L. R. Yealland respectively.

LLOWSHIP OF MEDICINE AND POST-GRADUATE
IEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 7th to SATURDAY, May 12th.—CANCER HOSPITAL, Fulham-road, S.W. Tues., at 2 P.M., Operations and Demonstrations by Mr. Ernest Miles. —HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C. Tues., at 2.30 P.M., Ward Round by Dr. R. S. Frew.—ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C. Wed., at 12 noon, Demonstration by Mr. Affleck Greeves. The above are free to medical men.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive Course—Clinical—Operative Surgery Class.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Special Post-Graduate Course in Psychological Medicine, afternoons only.—CENTRAL LONDON OPHTHALMIC HOSPITAL, Judd-street, W.C. After Course in Ophthalmology—Clinical, Lecture-demonstrations, and Operations performed daily.—INFANTS' HOSPITAL, Vincent-square, S.W. Afternoon Course.—LONDON SCHOOL OF TROPICAL MEDICINE, Endsleigh-gardens, W.C. Tues. and Thurs., at 2 P.M., Lecture-demonstrations by Dr. Carmichael Low and Dr. Philip Manson-Bahr.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. Wed., 5.15 P.M., last Lecture-demonstration in Series in Electro-Therapy, given by Dr. C. B. Heald.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Special Course—Clinical, and Series of Lectures throughout the month. Pathology Course can be arranged if desired. Further particulars from Secretary.

IVERSITY COLLEGE, Gower-street, London, W.C.
MONDAY, May 7th, TUESDAY, May 8th, and THURSDAY, May 10th.—5 P.M., Dr. G. E. Coghill (Wistar Institute, Philadelphia): Anatomy and the Problem of Behaviour.

NDON SCHOOL OF DERMATOLOGY, St. John's Hospital, eicester-square, W.C.
MONDAY, May 7th.—5 P.M., Dr. H. Haldin-Davis: Drug Eruptions.
TUESDAY.—5 P.M., Dr. H. W. Barber: Alopecia Areata and Vitiligo.
THURSDAY.—5 P.M., Dr. S. E. Dore: Mycosis Fungoides.
FRIDAY.—5 P.M., Dr. G. B. Dowling: Skin Diseases Due to Protein Sensitisation.

TAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, May 8th.—3.15 P.M., Mr. F. D. Saner: Treatment of Acute Suppuration.

GRAVE HOSPITAL FOR CHILDREN, 1, Clapham-ad, S.W.
WEDNESDAY, May 9th.—4.30 P.M., Mr. Cecil P. G. Wakeley: Clinical Demonstration.

NCHESTER ROYAL INFIRMARY POST-GRADUATE OURSE.
TUESDAY, May 8th.—4.15 P.M., Dr. F. Craven Moore: Constipation.
FRIDAY.—4.15 P.M., Mr. J. P. Buckley: Demonstration of Surgical Cases.

VERSITY OF BIRMINGHAM.
MONDAY, May 7th.—4 P.M., Prof. F. H. G. Van Loon: A Study of Insanity Among Primitive Peoples in its Bearing on the Problem of Heredity.
THURSDAY.—4 P.M., Dr. L. G. Parsons: Recent Advances in Our Knowledge of Rickets and Allied Diseases. (First Ingleby Lecture.)

Appointments.

LER, W. M., M.B., Ch.B. Aberd., has been appointed one of the Medical Referees under the Workmen's Compensation Act for the Lochaber District (Sheriffdom of Inverness, Elgin, and Nairn).

lington Green Children's Hospital: MCMICHAEL, J., M.B., Ch.B. Edin., House Physician; and ALEXANDER, G. L., M.B., Ch.B. Edin., House Surgeon.

fying Surgeons under the Factory and Workshop Acts: MACIVER, I. H., M.B., Ch.B. Edin. (Fort William, Inverness); WHYTE, J. A., M.B., Ch.B. Aberd. (Aberchirder, Banff); MULLIGAN, J. A., M.B., Ch.B. Aberd. (Bervie, Kincardine); and MCKENZIE, J., M.B., Ch.B. Aberd. (Rhynie District, Aberdeen).

Vacancies.

For further information refer to the advertisement columns.

n Borough Education Authority.—School Dental Surg. £500.
n Hospital, Gunnersbury-lane, W.—Res. M.O. £150.
sley, Mount Vernon Sanatorium.—Asst. Tub. O. £450.
ord Borough.—M.O.H., &c. £900.
ist, Queen's University.—Prof. of Pathology. £900.
enhead Union Infirmary.—Two Res. Asst. M.O.'s. Each £200.
ngbroke Hospital, Wandsworth Common, S.W.—Hon. Phys.
nton, Royal Alexandra Hospital for Sick Children. H.P. At rate of £100.
ol University.—Demonstration in Pathology.
Cardiff, Glan Ely Hospital.—Two Res. M.O.'s. £350 and £200 respectively.
Carlisle, Cumberland and Westmorland Mental Hospital.—Med. Supt. £850.
Chester Royal Infirmary.—H.S. £150.
Durham County and Sunderland Eye Infirmary.—H.S. £450.
Durham County Council.—Asst. Welfare M.O. £600.
Exeter, Royal Devon and Exeter Hospital.—Asst. H.S. At rate of £100.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Hong Kong, University Faculty of Medicine.—Professor of Physiology. £800.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Registrar. Honorarium of £100.
Hospital of St. John and St. Elizabeth, 60, Grove End-road, St. John's Wood, N.W.—Res. H.P. At rate of £100.
Leeds, City of.—Asst. M.O. for Maternity and Child Welfare. £600.
Leeds Public Dispensary.—Hon. P. and Hon. S.
Lewisham Metropolitan Borough.—Asst. M.O.H., &c. £650.
Leyton, Borough of.—M.O.H. £1100.
Liverpool and District Hospital for Diseases of Heart.—Research Fellowship. £150.
London Skin Hospital, 40, Fitzroy-square, W.—Hon. P. or S. and Surg. Reg.
Maidstone, Kent Education Committee.—School Medical Inspector. £600.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
New Zealand Mental Hospitals Dept.—Sen. Asst. M.O.'s. £765–£900.
Portsmouth and Southern Counties Eye and Ear Hospital.—Hon. S. to Ear, Throat, and Nose Dept.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—Hon. Asst. Dent. Surg.
Queen's Hospital for Children, Hackney-road, E.—Phys. in charge of Skin Dept.
Royal Free Hospital, Gray's Inn-road, W.C.—Asst. Phys. Also Ophth. Surg.
Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.
Southampton, Royal South Hants and Southampton Hospital.—H.S. £130.
St. Albans and Mid. Herts Hospital and Dispensary.—Res. H.S. £150.
Stoke Newington Metropolitan Borough.—Part-time M.O.H. £700.
Stoke-on-Trent, North Staffordshire Royal Infirmary, Hartshill.—Hon. Anæsthetist, Hon. Asst. Aural S., and Hon. Asst. Orthop. S.
University of London, South Kensington, S.W.—Laura de Saliceto Studentship. £150.
Walsall County Borough.—Asst. M.O. £600.
Walsall General Hospital—Sen. H.S. At rate of £200.
West Bromwich, Hallam Hospital.—Res. H.P. and Res. H.S. Each £250.
West Ham County Borough, Dagenham Sanatorium.—Asst. Res. M.O.
Willesden, Park Royal Hospital, Acton-lane.—Res. 1st Asst. M.O. £430.
Woolwich War Memorial Hospital, Shooter's Hill, S.E.—H.S. £120.
Worcester General Infirmary.—Sen. and Jun. Res. M.O.'s. £180 and £120 respectively.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Bradford-on-Avon (Wiltshire), St. Margaret's Hope (Orkney), Slough (Buckinghamshire) and Buckhaven (Fifeshire).

Births, Marriages, and Deaths.

BIRTHS.

BRADE-BIRKS.—On April 22nd, at a nursing home, Manchester, Hilda Kathleen Brade-Birks, M.Sc., M.B., Ch.B., L.R.C.P., M.R.C.S., D.P.H., wife of the Rev. S. Graham Brade-Birks, of a daughter.
HUNTER.—On April 29th at 117, Greencroft-gardens, N.W., to Mathilde, wife of Donald Hunter, M.D., M.R.C.P.—a daughter.
MACLEOD.—On April 25th, at Wargrave, Clevedon, Somerset, the wife of Dr. Macleod, of a daughter.
MORTIS.—On April 24th, at Shenley, Herts, the wife of Dr. R. H. Mortis, of a son.
SPROTT.—On April 27th, at a nursing home in Windsor, the wife of Norman A. Sprott, M.D., M.Ch., F.R.C.S., of a daughter.

MARRIAGES.

TUCK—ELMITT.—On April 25th, at St. Peter's, Littleover, Derby, Wilfred Henry to Mary Hermione Elmitt, M.B., B.S., only child of Mr. and Mrs. W. Elmitt, Lindum, Littleover, Derby.

DEATHS.

AGATE.—On April 23rd, at Queen Alexandra Hospital, Marseille, France, Henry St. Arnaud Agate, M.C., M.R.C.S., L.R.C.P.
BRIGGS.—On April 20th, at St. Mungo's Croft, Aspatria, Cumberland, Dr. William Perry Briggs, aged 72 years.
CHURCH.—On April 27th, at Woodside, Hatfield, William Selby Church, Bart., K.C.B., M.D., in his 91st year.
CORKERY.—On April 28th, at Alfreton, Timothy Corkery, M.D., aged 65.
LYNN-THOMAS.—On April 30th, 1928, at Ruthven, King Ussie, Inverness-shire, Ivan, the beloved husband of Dorothy Guthrie, and the only son of Sir John and Lady Lynn-Thomas, Llwynduris, Llechryd, Cardiganshire. Aged 31.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

HAIR IN FORENSIC MEDICINE.

CASES often occur in which the chief issue, or one of the chief issues, hangs literally on a hair. A murder has been committed and the arrested man has hairs on his clothing, or the weapon found in a suspect's possession has hairs adhering to its bloodstains; if the hair can be shown to belong to the victim the connexion is almost irrefutable. Again, a dispute arises over a consignment of furs; any evidence on the nature and quality of the hairs may determine the finding.

A study of hair from this aspect, if it is to be of any evidential value, must be as complete as possible, and the necessary microscopical examination is a formidable task. The technique was described at the Medico-Legal Society's meeting on April 26th by Dr. John Glaister, junior. With co-workers he has collected samples from every order, sub-order, and family of the mammalia and taken photographs of their transverse and longitudinal sections. The collection of photographs and specimens, adequately catalogued, is now at the disposal of those whose duty it may be to identify hair for the purposes of justice. The number of samples examined was about 2500. Human hair was studied in detail and samples were taken from all parts of the body of male and female persons of various ages. The medico-legal examination of a sample is a complicated process. It takes account of colour, length, texture, breadth; and the shape and condition of the tip, which may be clean-cut, rough-cut, or torn, and in which a certain amount of regeneration may have taken place. The condition of the base may constitute material evidence; the bulb will often show whether a hair has been pulled out or has fallen out. The cuticle may be smooth, serrated, or imbricated, according to the species of the animal which grew the hair, and the cortex and medulla, and the contour of the transverse sections, vary considerably with different orders. The duck-billed platypus, the lowest mammal from the evolutionary standpoint, has hairs with an extraordinary shield-shaped tip and a rudimentary medulla with scattered pigment; the cortex has longitudinal fibres with irregular granular spots. The spiny anteater and the elephant's tail are alone in possessing hairs composed of a hard substance like keratin, those of the former having a cigar-shaped tip. The hairs of deer have a peculiar stiff wave and small needle-like projections; the cross-sections show a honeycomb or lizard-skin arrangement of cells with a fine filmy lace-like centre. Giraffes are the only animals which provide hair with almost circular contour; seal hairs have a unique cigar-shaped section and hartebeest hairs a section rather like a kidney.

The hairs which possess the greatest legal importance are nearly all quite distinctive. Bovine hair and horsehair have a very concise and irregular pigment; rabbits have hair with a narrow cortex and a proportionately broad medulla. Rabbit hair is bone-shaped, broad at the ends and narrow in the centre, and the ends are filled with small cells that fit into one another. Sea animals have hair with a jagged, irregular cuticle that produces "felting." Shrew hairs have a medulla that alternately contracts and expands throughout their length, and a tail-like formation at the tip. Naturally curled hair shows an overlapping of the layers of the cuticle, like slates on a roof, which is absent in an artificial curl.

Hair from the primates is like that of man, but presents differences which the expert can appreciate without much difficulty. At the Medico-Legal Society's meeting Dr. Ainsworth Mitchell said that a negro's hair resembled a great ape's much more than it resembled a European's. When human hair goes grey the medulla becomes fragmentary and irregular. Hair re-growing after being cut has a little shoot or process at the tip that is quite distinctive. Dyed hair has the appearance of being varnished and of being covered with a film that obscures the original pigment and the layers. Pubic hair is very wiry and resistant, and all but the fairest has a very dense uniform medulla. It is similar to moustache hair, but the latter has an irregular triangular contour. Wiriness goes with angularity in section. Age can be estimated approximately, but not accurately, and a quantity of hair is necessary. Nits, food, wax, sweat, and other extraneous matter may be of great legal importance, and the presence of arsenic in particular parts of the hair may indicate the period at which the drug was taken. The national value of a collection like Dr. Glaister's, backed by his knowledge, is considerable, and it will be of great assistance in identifying doubtful samples of hair. He is now engaged on the comparative study of the hairs of different races.

COLLECTIONS OF REPRINTS.

THE corporate spirit animating certain hospitals and institutes whose staffs are actively prosecuting research in different directions, manifests itself in the periodical collection of published articles into one volume. These are o widely separate in scope and in value. The grey to issued by the Rockefeller Institute are well known in libraries. The London School of Hygiene and Trop Medicine provide blue-books of collected addresses laboratory studies and, in recent years, the Middle Hospital has followed the same practive. Reprints various sizes, bound together, in the volumes issued f this hospital, make the book less convenient to ha than are the more extravagant volumes where the arti have been reset. This year's crop of some 40 orig publications makes a substantial and creditable volum

AN INDIAN MEDICAL OFFICER OF THE PAST

Joseph Hume, surgeon in India and a leader of Radical Party in the House of Commons, deserves to remembered by the medical profession. The orpha son of a shipmaster of Montrose, born in 1777, and v difficulty educated as a doctor, he was in 1797 appoin assistant surgeon in the sea service of the East In Company. A man of great industry, no work came am to him, and it is noted that he quickly mastered Hindust and Persian. So when he was sent to the Mahratta W in 1801, as surgeon of a Sepoy regiment, we find employed as interpreter to the column commander. T gave him an opening of which he made such good use to win the special commendation of Lord Lake, Commander-in-Chief. In those days work of this kind not go without reward; besides, he did not neglect his interests; and in 1807 he was able to retire from the ser with a fortune of £40,000. He travelled in Europe and Mediterranean for a couple of years, translated the "Infer into blank verse, and in 1812 entered Parliament, of wh he remained a Member, off and on, for 30 years. As on the Radical Party he was indefatigable in exposing pu extravagance, and the Dictionary of National Biogra ascribes to him the inclusion of "retrenchment" in t party's programme. He resisted flogging in the Army, press-gang, and imprisonment for debt, and tried to end East India Company's monopoly of trade with India, t trade might increase and greater employment be caused England. Twice he was Lord Rector of Aberdeen Univ sity. He roused, of course, much opposition, but when died in 1855 Lord Palmerston, moving a new writ Montrose, said that Joseph Hume had disinterestedly tak the lead in almost every branch of improvement, that had an industry nothing could tire, and vast perseveran There was no bitterness in his conflicts; "our friend wa man on whom we must all look back with admiration a regret." Another Member, with unnecessary pessimis added that if ever there was an honest Member of Par ment Hume was one, and another said he had ne made an enemy or lost a friend.

X RAYS IN THE TREATMENT OF ASTHMA.

THE results of treating asthma by so-called spec methods are not so successful as to discourage more empiri therapeutics. Treatment by X rays still has its support and some results of this method have lately been publish by Vallery-Radot and his colleagues [1] in France. Af discussing the methods and results of previous workers th describe 64 cases of their own in which the spleen and lun were irradiated, the length of treatment varying accordi to the progress made. Nineteen of the patients w completely cured, it is said, for 12–18 months, whilst 16 w relieved, and 29 did not respond at all. The authors a unable to explain the beneficial influence of X rays, b suggest that they may act by modifying the acid-ba balance of the organism. They do not mention the probab effect of suggestion, which often plays an important pa in the relief of asthmatic symptoms. Nausea, vomiting, a exacerbation of the asthma sometimes occurred aft prolonged treatment, but they did not notice the eosinophi and effects on expectoration which have been reported other observers. The treatment is, they consider, of gre value in some cases, though in others it is of little us Unfortunately the method of trial and error is admitted the only means of distinguishing between the two groups

THE YEAR OF AMBROISE PARÉ'S BIRTH.

Blancus writes: In a footnote to Prof. Meyer-Steineg interesting article on the treatment of gunshot woun (THE LANCET, April 21st, p. 840) it is stated, in agreeme with Mr. Stephen Paget's biography, that Ambroise Pa was born in the year 1510. For many years 1517 was giv in French and English reference books as the year of h birth, and Dorland's dictionary mentions 1509. Is it no decided that 1510 is correct?

[1] La roentgenthérapie dans le traitement de l'asthme et coryza spasmodique: P. Vallery-Radot, P. Gilbert, P. Blamouti et F. Claude, Ann. Médecine, 1928, xxiii., 214.

Linacre Lecture

ON

LINACRE'S INFLUENCE ON ENGLISH MEDICINE.

Delivered at St. John's College, Cambridge, on May 5th

BY SIR GEORGE NEWMAN, K.C.B., M.D. EDIN., D.C.L., LL.D.,

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

[Sir George Newman began his address with an eloquent description of Florence as the centre of cultivation of learning and art, when "there came to this beautiful city of flowers and colour and song about 1485 a grave, studious, and sober-minded Englishman, Thomas Linacre."]

THE LIFE AND WORK OF LINACRE.

Linacre was born at Canterbury probably in 1460, and went to the monastery school at Christ Church, Canterbury, under the priorship of William Tilly, more commonly called Selling, from the name of the Kentish village of which he was a native. Selling was a Fellow of All Souls and an old pupil of Politian at Bologna, and as presiding monk in the Canterbury monastery the tutor and preceptor of Linacre, who at the age of 20 was removed to Oxford. There he was elected in 1484 Fellow of All Souls, which became at that time an English home of Greek learning. Under Vitelli he studied Greek in company with Grocyn and William Latimer, and became an accomplished scholar. When Archbishop Warham appointed Selling, the Prior of Christ Church in Canterbury, as ecclesiastical ambassador to Rome, Linacre accompanied him and by him was introduced to Politian. Whether or not he sojourned en route at Bologna, Linacre soon found himself in the midst of the Platonic Academy at Florence, patronised by Lorenzo de Medici, the companion and fellow student of his sons, Piero and Giovanni, and the pupil of Chalcondyles and Politian. We do not know the exact pursuits or studies of Linacre; we only know he stayed in Florence for more than 12 months, that he associated with the *habitués* of the Medician court, attended the Academy classes and disputations, read in the libraries, shared in the pleasures and gaieties of Florence and became intimately acquainted with Chalcondyles, Politian, and Ficino, the leaders of the Academy, and brilliant friends of Lorenzo de Medici. We cannot here enter into the scholarship and lives of these four men, but we cannot doubt that they left an enduring mark, the love of learning, upon him. It is as if he came out of the shades of scholasticism at Oxford into the sunlight of a larger life and a wider purpose. Like Saul of Tarsus on the road to Damascus, or like Mahomet on Mount Hira, he saw a new light.

From Florence Linacre, now disciple of Politian, repaired to Rome. A perusal of ancient manuscripts obtained in the libraries of the capital had been one great motive of Linacre's journey. One day he was reading in the Vatican when Hermolaus Barbarus suddenly approached the place where he was seated, and introduced himself. This accidental interview began a firm and lasting friendship which was afterwards strengthened by a similarity of disposition and pursuit. Dr. Noble Johnson says that "of all the acquaintance which Linacre formed in Italy, this was perhaps the most distinguished, and the value of the friendship was enhanced by the literary celebrity of the individual with whom it was contracted." Who was Barbarus? He was born in Venice in 1454, son of a senator, grandson of a doge, and deputed envoy, and subsequently Ambassador, to Rome from the States of Venice, and who on account of services rendered was nominated by Pope Innocent VIII. to be patriarch of Aquileia. For accepting such preferment he was proscribed by his government, but was residing in Rome when Linacre arrived. Barbarus, indifferent to worldly honours: acknowledged but two masters, Christ and letters." Above all, he was a student of scientific and medical literature, a devoted translator of Aristotle, Dioscorides, and Pliny at Padua, and held a chair in that University. He was the vigorous critic of Averroistic Aristotelianism. He died of the plague in 1494, aged 40.

On leaving Rome Linacre proceeded to Venice to seek the acquaintance of Aldus Manutius, a disciple of Aristotle, and the master printer of Greek editions, who played so large a part in the struggle between Hellenism and Arabism. From Venice Linacre went to Padua, where he first really studied practical medicine, and took the doctorate degree. Thence by Vicenza and through the Cevennes he returned to London. He is believed to have sat at the feet of the celebrated Italian physician Leonicenus during a brief sojourn at Vicenza.[1]

Happy is the student who at an early stage in his studies receives the inspiration of great purpose and the contact of great minds. It is the dynamic of all true education. Linacre took with him to Italy a scholastic grounding in the classics; he brought back with him a living comprehension of the service which pure Hellenism could render to English Medicine, of the essential importance of Aristotle, and of the necessity of a reorientation of medical knowledge as transmitted by the Arabs. The Florentine Academy repudiated Arabist teaching. We must not forget that 450 years ago a training in medicine in Western Europe meant a course of reading and disputation on Hippocrates, Galen, and Avicenna. In the first year the student usually read the first Canon of Avicenna and the ninth book of Rhazes; in the second year the *Ars parva* of Galen, and the fourth book of Avicenna; in the third year the aphorisms of Hippocrates, the works of Dioscorides and Commentaries on Avicenna. Medicine was taught as a branch of philosophy after the style of Averroes. Such a course Linacre had pursued at Oxford and in Italy. He went out a scholar, he returned a doctor of medicine. It was not until the sixteenth century that the study of medicine dealt directly with the body of man and was based upon experimental science.

When Linacre came back to England he settled down again at Oxford, but as a teacher rather than an undergraduate, as a translator rather than a student, as a medical reformer rather than a schoolman. He was incorporated as M.D., and with Grocyn and Lilly he was recognised as one of the pre-eminent restorers of Greek scholarship in England. He was, in fact, the first. He tutored Sir Thomas More, who came up to Oxford in 1499, and about the same time he had an even more distinguished pupil in Erasmus, during his first visit to England. In 1501 he became tutor to the young Prince Arthur of Wales, while temporarily at Oxford, and subsequently he became physician to Henry VIII. This complimentary appointment brought him to London, where he resided at the Stone house, Knightrider-street, near the court at Bridewell, in the vicinity of St. Paul's, and introduced him to a London medical practice, which though limited, was in the highest circles. The routine practice of medicine was in the hands of apothecaries and quacks. In accordance with the custom of the time, Linacre was scholar, physician and priest, and was ordained by his influential patrons to a number of non-residential livings.[2] His priestly duties do not appear to have

[1] See Life of Thomas Linacre. J. Noble Johnson, 1835; and edition of Linacre's Translation of Galen's De Temperamentis. By J. F. Payne. 1881.

[2] These included Rector of Mersham in Kent, 1509; a prebendary stall in Wells Cathedral, 1509; Vicar of Hawkhurst in Kent, 1510; a canonry and prebend of St. Stephens, Westminster, 1517; prebend of South Newbold, York, 1518; precentor of York, 1519; Rector of Holworthy in Devon, 1518; Rector of Wigan in Lancashire, 1520. The Master of St. John's informs me of yet another ordination of Linacre—namely, that of Rector of Freshwater, 1520. The episcopal records of Winchester show that "Thomas Linacre, Doctor of Arts and Medicine," was instituted Rector of Freshwater in the Isle of Wight, August 8th, 1520, and resigned with a pension in 1522. The patrons at the time were the Prior and Convent of Domus Jesu de Bethlehem de Shene. In the seventeenth century the Archbishop of York conveyed the advowson to St. John's College, Cambridge.

interfered with his medical practice, his attendance at Court or his translation of Galen. Linacre's residence in Oxford, before and after his visit to Italy, extended to 21 years, and his life in London covered 23. He died in 1524 in his sixty-fourth year, and was buried in St. Paul's Cathedral, but the monument erected by Caius in 1557, and the grave itself, disappeared in the conflagration of 1666.

English Medicine in the Fifteenth Century.

Medical practice in England in the time of Linacre was Arabic in origin. The Byzantine influence had been authoritative from Bede to the Norman period, and was succeeded by Arabian doctrine until the Reformation. Jews, priests, and Franciscan friars were the leading practitioners. It was reported to Parliament in 1511 that the greater part of these practitioners had neither insight nor learning; and that "they used sorcery and witchcraft to the hurt, damage and destruction of the King's liege people, most especially of those that cannot discern the uncunning from the cunning." The plague and leprosy were the formidable diseases, both favoured by "famine pestilences" due to bad harvests. The lesser maladies of the Middle Ages had in them a large element of hysteria or psychoneurosis, so that faith came not amiss in the course of treatment. The extant leech-craft provided for consumptives, cancers, stone, gout, St. Vitus's dance, epilepsy, catarrh, ague, dropsies and jaundice, fluxes and ruptures, gout and rheumatism. The resources of surgery were few and the instruments simple, but splints were used, heat was applied by cauteries or hot bricks, and it was known how to staunch blood, extract missiles, reduce dislocations, and perform simple amputations. The resources of the native herbals were extensive and, in the sixteenth century, numerous excellent editions of these herbals were published. The physician in Chaucer was grounded in astronomy, and astrological lore played a large part in the times and seasons of treatment as well as its character. The apothecary was of long standing and an earlier representative of medicine than the physician. He was, Bullein said, the physician's cook. Yet he was not guiltless of other and worse deeds, for he was a seller of poisons. He it was whom Romeo sought—

> "I do remember an apothecary,
> And hereabouts he dwells, which late I noted
> In tatter'd weeds, with overwhelming brows,
> Culling of simples; meagre were his looks,
> Sharp misery had worn him to the bones:
> And in his needy shop a tortoise hung,
> An alligator stuff'd, and other skins
> Of ill-shap'd fishes; and about his shelves
> A beggarly account of empty boxes,
> Green earthen pots, bladders, and musty seeds,
> Remnants of packthread, and old cakes of roses,
> Were thinly scattered to make up a show." [3]

In the fifteenth century leprosy was no longer prevalent, but in September of the year in which Linacre left Oxford for Florence (1485) a strange and fatal malady, known as sweating sickness, broke out in London, believed to have been introduced by the mercenary troops of Henry Tudor's expedition landing at Milford Haven. It was like an autumn influenza and did not recur in epidemic form until 1508, then again in 1517 and 1551. It was a subject of correspondence in the letters of More and Erasmus, and Wolsey was one of its victims. It was, of course, hailed as a "new" disease as influenza and certain nervous disorders have been in our own time. The plague, the leprosy, and the sweat proved the necessity of invention of sanitation. In 1388 the first Sanitary Act ever made in England was passed by the Parliament of Cambridge. It followed the earlier sanitary ordinance of Edward III. in 1371, and was succeeded by others in the fifteenth century. Before Linacre's death it had become a national custom, initiated by royal decree, to practise notification of infectious disease, quarantine, the marking of infected houses, and scavenging and sanitary inspection. The medical profession, however, were not yet identified with epidemical observations, sanitation, or preventive medicine. Such patients as they had were amon the well-to-do, who needed not public assistanc Linacre left no clinical records of extant diseas though he had ample opportunity. But the same true of other well-known court physicians of the tim The barbers and chirurgeons were occupied with the lancets, the apothecaries with their alchemy ar simples, and the physicians with scholastic learning

The Domination of the Arabs and Schoolme

When Linacre returned from Italy, English medici was dominated by the Arabic interpretation science. It was introduced to England not later tha the twelfth century by the Jews and by Arab medical writings, the principal authors of which a familiar to us in the catalogue of the library Chaucer's physician.[4] Sir Norman Moore has to us that the Arabian medical writings were used al in Ireland in the fourteenth and fifteenth centuries and Henry VIII. advised Wolsey to take "the pil of Rhazes" as safeguard against the sweat. Throug out Britain it was a time of fossilised Arabism ar effete scholasticism, which had remote origins. T century of Islamic invasion of the West (622–73 remains one of the wonders of the world. It starte with the conversion and flight of Mahomet; by 6 the Arabs had conquered Egypt and destroyed f the second time the Alexandrian Library. Abdalla and Musa, and their followers, marched across Nor Africa, capturing the old cities of Carthaginian rul by 710 Tarik had invaded Andalusia; within 20 yea the Moors, having possessed the land of Cordo and Seville, advanced over the Pyrenees to Ca cassonne, Narbonne, Avignon, and to Toulouse ar Bordeaux; only at the gates of Tours were th stopped by Charles Martel in 733. If he had faile the history of Europe would have been very differe

Indeed, as it was, the Arab invasion was so per trative that Jewish and Arabian influence becar greater and more insidious even than the march the Saracen hosts. From the year 750 the Easte Caliphate flourished for 500 years and the Weste beginning at the same time, for almost as lor In the reign of both, Arabic learning became dominar It had established itself as the vehicle and chan of Byzantine Greek medicine, which it derived fro its ability to assimilate the Syrian and Jewish medici of the Nestorians.[5] First Gondisapor and th Bagdad, took the place of Edessa—the origi Nestorian medical centre before 489—as the princi medical schools of the East and the influence of t great Arabian physicians, Rhazes of Bagdad, Abbas, and Avicenna of Bokara, spread wherev Arabian arms had won supremacy. The Canon Avicenna became in East and West the text-bo of medicine, carrying within its covers an inadequa and miscellaneous account of the learning of Hipp crates and Galen. The University of Cordova w founded in the eighth century and became the Bagd of the West. Of its leaders Abbucasis translat for Europe the works of Galen and Rhazes, a Avenzoar and Averroes those of Aristotle. T schoolmen of the Middle Ages carried on the traditi The trouble was that the tradition itself was fallacio The learning had come through Greek, Syria Persian, Arabic, and Latin, and in its translatio and retranslations had suffered almost as much by its Arabic transmutation.

The Arabs brought something of their own. W must not forget, for instance, that the first-ha clinical accounts of small-pox and measles were ma by Rhazes in the eleventh century and introduc en bloc into the Western medical literature. T

[3] Romeo and Juliet, V., i.

[4] Peter of Wimbledon, physician to Henry III.'s Que Reginald de Stokes of Oxford, Roger Bacon himself, John Gaddesden and his Rosa Anglica, Bernard of Gordon and Lilium Medicina, Gilbertus Anglicus, the author of the Co pendium, John of Burgoyne (the Sir John Mandeville Chaucer), John Arderne, the Newark surgeon, John Mirfi and his Breviarium Bartholomei, John of St. Giles, who stud at Montpelier, and was the friend of Grosseteste, were amo the exponents of Arabian Medicine in England.

[5] Gibbon's Decline and Fall of Rome, chaps. xlvii. a lxvi.; and Arabian Medicine. D. Campbell. 1926. Vol. i.

abs also brought their alchemy, their experiments, ir laboratory, their mathematics, optics, and ronomy, their exceptional faculty of deduction, ir immense love of learning—all these things iched their Greek acquisitions. But the acquisitions re overlaid with false conceptions of disease, with uperfluity of drugs, with astrological forecastings, d with their deep and inherent religious dogma, and this way both the Greek form and its spirit were t. Thus it came about that Hippocrates was gotten, Galenical doctrine became a static dogma, d Aristotle was mistaught. Aristotle, the son of a ysician, had been the father of biology as well as litics. He first laid down the rule and practice of serving Nature and following her ways. He became, Dante said, "the master of those who know." He t only based his natural studies on embryology and ıdered accurate records of what he found, but he t sought to formulate a basis for devising some laws nature, on biogenesis, on development, and on ysiological division of labour. He was free from gic and speculative "ideas," and eschewing that ich was unmeasurable became a "realist." He ıceived the universe to be a cosmos. Holding fast the rules of logic and keeping close to the facts of ual experience, he reached positive results, veri- ble by observation and experiment. Dealing with individual organism, as Hippocrates had dealt h the individual patient, he conceived a system of anic development. Though taught by Plato he ided teleological or supernatural explanations, t thus led men's minds to naturalism.

The principal Arabic translator of Aristotle was erroes, of Cordova, whose labours in the twelfth tury set a standard which covered Europe. He s known as the Commentator, and his "Colliget" s written about 1190. But the standard was not ely that of Aristotle, but an Averroistic interpreta- n of Aristotle. For Averroes had been reared in the trines of Islam, and interpreted the data of stotle from the Mohammedan point of view, ived from the sects of Islam, wholly antithetical to ek philosophy, and without apprehension of onalism. Averroes stands therefore always midway ween the theology of the schoolmen and the losophy of the Greek. He summed up his dogma wo cardinal doctrines, the eternity of matter and world (as distinct from the common belief that world was about to end) and the theory of the llect. "The first thing created by God," says Koran, "is intelligence," and by this term rroes meant the soul or anima. Renan summarised rroes for us by saying that he believed in "the nity of matter; the evolution of the seed by nt force; God infinite and indefinable; laws, re, necessity, reason; the impersonality of lligence; the emersion and reabsorption of the vidual man after death."[6] It was Omar yyam who said:—

> "I sent my Soul through the Invisible,
> Some letter of that After-life to spell:
> And by and by my Soul return'd to me,
> And answer'd 'I Myself am Heav'n and Hell.'"[7]

here is much in Averroes, both ancient and ern, that has stood the test of time, but the denial uman immortality divorced him from Islam as pletely as his quasi-rational basis of nature and eternity of the world separated him from the olman of Europe. He died in 1206 no man's d, for Averroistic Aristotelianism unwittingly used and misdirected the stream of new thought h Aristotle had originated. Aristotle had found support in Padua and the Venetian States, but in the Platonic Academy at Florence.[8] Before dawn of the Renaissance Florence and Venice sented the two poles of scientific philosophy as of n Italy. Florence swung in favour of ideals of and of platonic speculation and philosophy, ia and Bologna in favour of analysis, rationalism, and the naturalism of Aristotle. Averroes sought to combine both of them, and the schoolmen's transmutations of the Commentator misled Western medicine for 300 years.

But the Aristotelianism of Averroes was but half the problem faced by Linacre and the Oxford Reformers. For there was also scholasticism. It was in the thirteenth century that the English universities first arose, and the impulse created by the Crusades was diverted to the spread of learning. "The long mental inactivity of feudal Europe," said Mr. J. R. Green, "broke up like ice before a summer's sun. A new power had sprung up in the midst of a world as yet under the rule of sheer brute force." The new spirit led to "the great divide" in European scholasticism. The fundamental problem of scholasticism had been the objectivity versus the subjectivity of matter. Those who stood for the former were *realists*, those for the latter were *nominalists*, and for 200 years the battle of words between them had waged fiercely.

> "Myself when young did eagerly frequent
> Doctor and Saint, and heard great argument
> About it and about; but evermore
> Came out by the same door where in I went."[9]

But the emergence of Aristotle's science in Western Europe through the medium of the Arab translators was revolutionary. Until the beginning of the thirteenth century Aristotle had been known to the schoolmen only by his logic. From the advent of his science sprang a new impulse, and the ascendancy of the schoolmen of the early scholasticism, Roscellinus Abelard, and Peter Lombard gave way to that of the later scholasticism of Albertus Magnus and Thomas Aquinas the Dominicans, and of Ockham, Duns Scotus and Roger Bacon, the Franciscans. Too many of the translators of Aristotle had an imperfect knowledge of Greek as they had of the groundwork of science. Nevertheless the Toledo school of translators and many stray reporters transmitted and magnified the work of Aristotle in the western world. Thus Roger Bacon himself was stimulated. Though a schoolman he was progressive and became a true Aristotelian. the Father of the scientific method in England. His legacy was accuracy of method, criticism of authority. reliance on experiment. He also stood for the unity of truth. "All the sciences are connected," he said; "they lend each other material aid as parts of one great whole, each doing its own work, not for itself alone, but for the other parts." Two centuries before the Renaissance he declared that the whole course of man's intellectual development was not multiple but one, not discrete or detached, but continuous and interdependent. For Roger Bacon there was no Arabic breach. The Nestorian and Mohammedan schools of science in East and West were, to him, not only channels of Greek learning. but treasure houses which enriched it. "His aim," says Dr. John Bridges, "was induction leading to deduction, in order to construct."[10]

Linacre as Translator of Galen.

This, then, was the world of Linacre. There was the domination of Arabian medicine and there was the thraldom of the schoolmen. The fallacies of both stood in the way of progress and were awaiting reform. As we have seen, active medical practice occupied but a small part of Linacre's work after his return from Italy. Fifteen years were spent at Oxford before he removed to Bridewell about 1503. and 20 more years remained to him. Both at Oxford and in London he devoted the major part of his time to grammar and translations, and this was his first great contribution to the Renaissance. But it was not merely scholastic; it was purposive. It was designed to bring men's minds back to Aristotle. Stimulated by Barbarus, Linacre's ambition was to coöperate with Grocyn and Latimer in translating the extant writings of Aristotle direct from the Greek; as this joint task proved impracticable he assisted

[6] Averroes et l'Averroisme. E. Renan. 1852.
[7] Rubaiyat, lxvi.
Science and Mediæval Thought. T. C. Allbutt. 1901.

[9] Rubaiyat, xxvii.
[10] Life and Work of Roger Bacon. J. H. Bridges. 1914.

in preparing the famous Aldine edition of Aristotle 1497, and gave himself to translations of Galen. For Galen was a medical interpreter, whose writings were already in general use and acceptance; they constituted perhaps half of all surviving Greek medical literature, and covered every branch of medicine. The Hippocratic spirit was inadequately conveyed as the teleological explanations were overdone, blemishes in part responsible for the survival of Galen's books. But Linacre was a practical reformer, and by translating Galen he saw he would give to the English medical practitioner a vade mecum of immediate value, free from Arabic mistranslation and theological bias. He selected first, on the suggestion of Erasmus and as the basis of other works which he hoped to translate, Galen's treatise on *the preservation of health*, its foundation in nature, its art, its purpose, its priority over therapeutics. Then he took up Galen's *method of healing*, which was followed by his books on temperaments, on symptomatology, on the pulse, &c.[11] Thus he was responsible for six important works of Galen, that on the temperaments printed at Cambridge in 1521 being one of the first books printed here, and possibly the first in Greek type. Linacre was grammarian, humanist, priest, and scholar-physician rather than practitioner of medicine, and he used the printing press, as Albrecht Dürer used his engraved blocks, to cover Europe with his ideas. By this means he taught as grammarian the exact use and connotation of words, took men back to the original sources of scientific literature, and silently appealed for the use of reason instead of mere authority. Though his lesson-book on grammar prepared for Dean Colet's school at St. Paul's failed to meet with approval in England, and his translation of the "Sphæra of Proclus," the Alexandrian neo-platonist, was little more than a curiosity, his scholarly translations of Galen changed the direction of the schoolmen and countered the effect of the Arabian domination. They were more valuable than the Arabian translations, less petrifying and static, more inspiring and potential, and destined to open the new book of the science of anatomy and physiology. Galen himself was less Galenical than the Arabs had made him, and Linacre's translations removed the reproach which medicine derived from the blemishes of its Arabic form and contributed to the introduction of the Hippocratic spirit. Haller attributed the advance of human anatomy in the sixteenth century to the revival of humanistic learning and the invention of printing. Within a generation after Linacre's death the whole conception of human anatomy and physiology had changed in the medical schools of Europe, and your own Charles Creighton in his classic "History of Epidemics in Britain" said that such translations as those of Linacre opened the way a century later to the standard clinical contributions of Willis, Sydenham, and Morton. Linacre's aim was to revive medicine with Greek learning from its pure source in the same way as literature and philosophy was reviving from the Renaissance of the classics. Inspired at Florence as a Platonist, he became the forerunner of Aristotelian medicine in England, and the principal initiator of the scientific movement which was the turning-point in modern medicine.

Foundation of the College of Physicians.

But the turning-point could not be reached only by translations of ancient learning. New learning must be acquired, a new orientation of English medicine other than Arabic must be established, a new spirit such as had awakened Italy must be sought and found. Though a generation had passed since Linacre returned from Florence and Padua he had not forgotten the energising effect of the close personal contact with great minds, nor could he ever escape from his own profound conversion of mind and heart, a transformation which had been steadily confirmed by the passage of events. The world itself was larger. Since Linacre was in Italy, Columbus had discovered America, Vasco da Gama had rounded the Cape, Ferdinand had driven the Arabs from Granada and the Moorish Kingdom in Spain was extinct, Luther had nailed his theses to the church door at Wittenberg, and Thomas More had published his "Utopia." We must not think of Linacre only as grammarian and humanist; he was like his friends, a man of affairs, and his business was to reform English medicine. He knew of its plight and chaos; he knew it was not a distinct profession and that medical practice was little better than an empirical, illiterate, and mechanical art. Having by his translations of Galen given it the means of the new learning, he set to work to devise a method for its organisation. We do not know what share, if any, Linacre had in the passage of the Medical Act of 1511, but it is certain that it stirred him to action. That Act was the second great step to medical reform after the Charter of the Barber-Surgeons in 1461. It provided that no one should practise as physician or surgeon in London or within seven miles of its walls except he be examined and licensed by the Bishop of London or the Dean of St. Paul's with the aid of competent doctors of physic as assessors, and that in the provinces the duty of licensing medical practitioners should rest similarly with the Bishop of the diocese. This was better than the previous unlicensed confusion, but Linacre desired to liberate medical practice from the control of the church as well as to lead it into the paths of Plato and Aristotle and the freedom of Hippocrates. In a word, he saw that what was needed was the endowment of medical lectureships at Oxford and Cambridge, and the establishment of a central academy of medicine, which should be charged with the duty, foreseen by Frederick II. in the thirteenth century, of licensing physicians who were medically competent and whose education had been based upon literature and philosophy. This was the origin of the foundation of the Linacre lectures at Merton and St. John's for the public exposition of Hippocrates and Galen, and in September, 1518, by royal letters patent, a Charter was granted by Henry VIII. to Linacre and five other physicians for the foundation of the College of Physicians of London and for the regulation of the practice of physic in London and for seven miles round, and the punishment of offenders. Four years later these privileges were confirmed by statute and extended to the whole country. Linacre became the first President of the College from 1518 until his death in 1524; to his munificence its establishment was due, and in his house its meetings were first held.

Beside the ostensible object of providing a statutory and scientific basis for qualification in medicine the College of Physicians exerted a powerful influence on its science and art. It liberated it from the control of the Church; it exempted it from the leaden rule of orthodoxy which dominated the universities; it brought the competent medical practitioner into the learned world; it encouraged English physicians to study in the universities of Europe and brought foreign physicians into English culture; it was the first systematic plan of education prescribed in England for a faculty of medicine. Out of it great things were to come.

> "The congregated college have concluded
> That labouring art can never ransom Nature
> From her inaidable Estate." [12]

Within a century it had built for itself a comprehensive institution for scientific advancement comprising anatomical and special lectureships, a phys-

[11] Linacre's published translations were as follows: Proclus de Sphæra (Aldus Manutius, Venice), 1499; Galeni De Sanitate Tuenda (Rubens, Paris), 1517; Galeni Methodus Medendi, vel de morbis curandis (Maheu, Paris), 1519; Galeni Pergamensis De Temperamentis (Siberch, Cambridge), 1521; Galeni Pergameni De Naturalibus Facultatibus (Pynson, London); 1523; Galeni Pergameni De Pulsuum Usu (Pynson), 1523; De Symptomatum Differentus Et Causis (Pynson), 1524; Rudimenta Grammatices (Etienne), 1533; De Emendata Structura Latini Sermonis (Pynson), 1524.

[12] All's Well that Ends Well, II., 1.

rden, a museum, a library, and the publication of e London Pharmacopœia for the standardisation of ugs.

THE BEGINNINGS OF THE BRITISH PHARMACOPŒIA.

The letters patent granted by Henry VIII. which nstituted the College of Physicians were confirmed an Act of Parliament in 1523, which particularly ovided for the supervision and scrutiny of every nd of medicine prescribed by physicians practising thin the City of London and a radius of seven miles ereof. The means proposed for such supervision is that certain persons appointed by the College ould be authorised to enter the premises of all othecaries and destroy any defective drugs found ere. They were to be assisted by the Warden of the stery of Poticaries within the City, and a few years er the College invoked the aid of the Warden of the ocers. A hundred years later, in 1618, some of these wers were also conferred separately on the apothe-ries, and this was confirmed by the Apothecaries t of 1815. This idea of Linacre and his friends was w to English medicine, though it had ancient abic origins. Thus was introduced for the first ne in this country the principle of pharmacological ntrol of substances used for the treatment of disease. e records of the College show that the publication a Pharmacopœia under its auspices was discussed the sixteenth century; but it was not until 1618, years after the Nuremberg *dispensatorium* of lerius Cordus and a century after the foundation of College, that the first London Pharmacopœia was ued. It was dedicated to James I. and proclaimed a Royal Proclamation which required, charged, and nmanded all apothecaries not to compound or make dicines in any other manner than that authorised. is first London Pharmacopœia included more than housand articles, "many of an extraordinary and n revolting character," and 900 preparations and npounds.[13] The ancient pharmacopœias of the lege of Physicians were the forefathers not only of modern pharmacopœias, issued since 1862 by General Medical Council instead of the College, they were also the parents of the famous ies of Acts of Parliament which in our own time ve dealt with the sale of food and drugs, the ulation of pharmacy and poisons, and the subse-nt control of foods, dangerous drugs, and thera-tic substances. The Therapeutic Substances Act, 5, and its Regulations passed by Parliament last r, which for the first time provide for the standard-ion of biological as distinct from chemical drugs, the direct and youngest descendant of the first rmacopœia of the College of Physicians, which se out of Linacre's far-seeing though primitive ervision of the drugs and medicines used by sicians and apothecaries at the time of the naissance.

he private library of Linacre was the nucleus and ndation of the College library which became the ository of many precious legacies from William ert, Matthias Holbosch, Sir Theodore Mayerne, d Dorchester, Selden (who left his Arabic medical nuscripts), Elias Ashmole, Matthew Baillie, Harvey, others. It became a storehouse of the literary sterpieces of medicine, and though much was royed by the Fire of London in 1666, much ained.

he "Anatomy Lectures" were delivered on the ian model from an early period in the history of College, and about the middle of the sixteenth tury dissection of the body was performed. The ual Harveian oration exhorting the Fellows of the ege "to search and study out the secrets of ure by way of experiment, and, for the honour of profession, to continue in mutual love and affection ng themselves," began in 1656, the year before that Harvey's death. It was established and endowed Harvey, was to be accompanied by a feast, and fter days became in large degree commemorative Harvey himself. The Lumleian surgical lectureship was first established by Lord Lumley and Dr. Richard Caldwell in 1581; the Goulstonian lectureship in pathology in 1635; and the Croonian physiological lectures began in 1749.

LINACRE'S EARLY SUCCESSORS.

More germinal than the actual achievements of the College has been the Greek spirit it embodies. Linacre was not himself an investigator or research worker, but he was the introducer of the spirit of the Renaissance to English medicine, and he designed his College for its growth and cultivation. During the last few years of Linacre's life there was a Fellow of Corpus Christi, named Edward Wotton, who followed in the footsteps of Linacre in the study of Greek at Oxford and medicine at Padua. He became President of the College in 1541 and was the first of the English physicians who applied themselves to the Aristotelian principles of biology. Gesner and Haller spoke well of him, and his text-book was the first printed book on zoology by an Englishman. It contains much from Aristotle and Pliny. There followed him in the presidential chair Dr. John Clement, Cardinal Wolsey's Professor of Greek at Oxford. He had been brought up in the household of Sir Thomas More, to whose children he was tutor. Like Sir William Butts, Dr. Chambre, Dr. Fryer, Dr. Huicke, and Dr. Owen, who became distinguished Fellows of the College, he was associated with the court of Henry VIII. and carried on the Linacre tradition. The essence of that tradition was embodied also in John Caius, of this University, who qualified as M.D. at Padua in 1541 and became Professor of Greek there for two years, being paid by noble Venetians to discourse upon Aristotle. He was a zealous collector of Greek manuscripts in Italy, and modelling himself on Linacre he was a translator of Galen, an editor of Celsus, and one of the first classical scholars in Europe. When at Padua he lived for eight months with Vesalius and caught from him his great method of anatomical teaching, which Caius first introduced into this country by his lectures in the hall of the Barber Surgeons shortly after his return from Italy. He was also, in one respect, a clinical observer as well as anatomist and naturalist, for he wrote the first account of the sweating sickness of 1551 from his experience of the outbreak at Shrewsbury. He was the refounder of Gonville Hall as Gonville and Caius College, of which he became Master in 1559, and he built the four College gates of Humility, Virtue, and Wisdom, which led to that of Honour. For nine years he was President of the College of Physicians. "The effects of Linacre's teaching," wrote Sir Norman Moore, "are shown in the life of Caius. Both men in their humility, their love of learning, their public and private generosity, are examples which have affected English physicians ever since."[14]

When Caius was living with Vesalius at Padua there was born at Colchester the man who is described by Lord Bacon as "the father of experimental philosophy" in Britain. This was William Gilbert, the illustrious author of "De Magnete." He had studied, like Linacre, in Italy for two or three years. He was a Fellow of St. John's, an M.D. of Cambridge, and became physician to Queen Elizabeth. He employed the leisure from his London practice in investigation into what he called "electrics," a property not only of amber, but of glass, rock-crystal, diamond, sulphur, and sealing-wax. This was the beginning of the use of the term "electricity" and the scientific foundation of magnetism which had been known since the thirteenth century. In 1600 he was President of the College and in the same year published his famous book of inductive philosophy, which records his numerous experiments and discoveries over 18 years. The reading of this book turned Galileo's mind to magnetism. A legacy in Gilbert's will showed his devotion to the College:—

"Item. I geve to the Colledge of Phisitians in London all my bookes in my Librarye, my Globes, and Instrumentes, and my cabinet of myneralles,"

[13] Munk's Roll of the College of Physicians, iii., 371–392.

[14] The History of St. Bartholomew's Hospital, 1918, ii., 407–420.

and in a parting legacy he remembers its Fellowship too—

"Item. I geve sixe poundes thirteen shillings foure pence the next quarter daye after my deathe to be bestowed by the Treasurer of the Colledge to make them a dynner." [15]

The greatest ornament of the College of Physicians and of English medicine also hailed from Cambridge, for William Harvey was at Caius College in 1593. Like Linacre he had spent his school days at Canterbury, and like him he took his degree at Padua (1602). He was physician to St. Bartholomew's Hospital and physician to the King. In 1615 he was appointed Lumleian lecturer at the College of Physicians, and his autograph notes of his first lectures in 1616, six days before Shakespeare died, are in the British Museum. They show not only the width of Harvey's classical knowledge, but also contain his first pronouncement of his discovery of the circulation of the blood, which was subsequently published in his immortal book, "De Motu Cordis" in 1628. He conquered envy in his life time, as Hobbes said, and lived to see his new doctrine established. He was a munificent supporter of the College to which he was devoted and to which he left his library.

Linacre, Clement, Wotton, Caius, Gilbert, and Harvey represent the kind of learning and the spirit of inquiry for the advancement of which the College of Linacre was founded. In the first century of its existence it brought together in a unified integration the constituent elements of the science and art of healing, the exposition of which was subsequently exemplified in Linacre's illustrious descendants, Glisson, Sydenham, Willis, and your own Heberden. To the philosophy of the ancients the College added a wider understanding of biology and physics; it introduced the natural study of anatomy and physiology; its pharmacopœia began systematic pharmacology and therapeutics; its observant practitioners opened the doors of clinical medicine; and Linacre's College of Physicians became the sole guardian of medical learning and education in England. It was humanist in origin but forward-looking in vision; it began as a corporate fellowship, but became the great mother school of English medicine; it sprang from ancient learning, but grew into the study of Nature and obedience to her laws; it echoed back to the Greeks, but called men forward to a new time and a new birth, passing away from textual and literal form to the larger occasion of the living purpose and spirit of the great masters.

The Oxford Reformers.

As the restorer of Greek learning in England Linacre exerted a remarkable influence upon the men of his time. He had distinguished pupils and friends. On the occasion of his first visit to England Erasmus was evidently impressed with the group of men who afterwards became known as the Oxford Reformers. We all remember his letter to Fisher: "When I listen to my friend Colet," he wrote, "it seems to me like listening to Plato himself. In Grocyn, who does not admire the wide range of his knowledge? What could be more searching, deep and refined than the judgment of Linacre? Whenever did nature mould a character more gentle, endearing and happy than Thomas More's?" [16] Sir Thomas More and Erasmus, whose famous translation of the New Testament was published in 1516, were among Linacre's pupils; Grocyn, the first teacher of Greek at Oxford, who followed the Peripatetic School, and Colet, who became Dean of St. Paul's, were his colleagues at Oxford; and Latimer and Lilly also shared his Greek studies. In after days, and before More had settled in Chelsea, several of them lived near each other in the vicinity of St. Paul's and the Charterhouse, engaged in different spheres in bringing about the English Renaissance from scholasticism. They stimulated each other, shared in each other's labours, marked each other's lives. In the church and i the State, in scholarship and in medicine, the Oxfor Reformers emancipated English thought. The discussed the reform of education, the amelioratio of the evil social conditions of the people, the mean and methods of propagating the Greek spirit i England. Their society was a Platonic academy and out of it grew More's "Utopia." "The Utopi will be found," says Mr. Seebohm, "to be in grea measure the expression of the views of the litt band of friends on social and political questions." It is inspired, he adds, by "a fearless faith in th laws of nature combined with a profound faith i religion." Nor was it merely a matter of confidence Before he became Lord Chancellor, More himse had been appointed by Parliament a Commissione of Sewers, and at his side there was the greates living authority on the compendius hygiene of Galen As a member of a group of practical reformers Linacr too, brought the genius of the group to the solutio of his problems. There is in his work unmistakabl signs of the humane statecraft of Sir Thomas More the Catholic religious liberty and piety of Dea Colet, the cosmopolitanism and wide learning o Erasmus. Above all, there is the inspiration o Barbarus. It would almost seem as if Linacr modelled his life on this extraordinary man whom h met so casually in Rome. Barbarus gave him mode and perhaps a standard of life for the regula student, turned his scholarly mind to medicine and confirmed him in the mission of Aristotle. Si William Osler used to say that a physician "ma possess the science of Harvey and the art of Sydenham and yet there may be lacking in him those fine qualities of heart and hand which count for so muc in life. Medicine is seen at its best in men whos faculties have had the highest and most harmoniou culture"; and thus he says many of the greates physicians have influenced the profession "less b their special work than by exemplifying those grace of life and refinements of heart which make u character . . . these have been the leaven whic has raised our profession above the dead level of business." [18] Of these Linacre was one. Whethe it was the flower of inborn character or contracte from his brilliant friends or otherwise acquired, hi personality comes down to us across 400 years wit an aroma and a virility alike creative, winsome an enduring.

The Foundations of Modern Medicine.

By piecing together the scanty records whic remain to us of Linacre's personality and achieve ments—his translations, his institutions, and himse —we shall find that like Petrarch he stood "on frontier that divides two peoples, looking both to th past and to the future." As a humanist he followe where others had trodden. He joined with them i awakening the spirit of man to his literary inheritanc Though a medical practitioner in a pregnant time he did not elucidate the processes of diseases; th great epidemics seemed to pass him by; he left n original work. But what he did as humanist an scholar-physician was, by adding to the heritag already there, to make possible the fuller interpretatio of the Greek spirit. Though he did not himself eve share in the consequent reconstruction, he laid th foundations on which we build, he sowed the seed which we garner the fruit. "The medieval heritag of Greek science and the Renaissance heritage Greek literature," says Singer, "proved barren themselves. It was not until the one fertilised th other than there was real and vital growth." That fertilisation was the work of Linacre and th Oxford Reformers; to carry on that work is the legacy to us. Their principal secular work whic remains to us is More's "Utopia." It is almost a tex book of elementary statecraft and preventive medicin

[15] Gilbert, Physician, Silvanus P. Thompson, 1903.
[16] The Oxford Reformers, F. Seebohm, 3rd ed., 1896, p. 115.
[17] Ibid., pp. 347–390.
[18] Life of Sir William Osler, Harvey Cushing, 1925, i., 459.
[19] The Dark Ages and the Dawn (Singer), chap. v. of Scien and Civilisation, 1923, p. 149.

None who read the 'Utopia,'" wrote Sidney Lee, can deny that its author drank deep of the finest pirit of his age. None can question that he foresaw ne main lines along which the political and social leals of the Renaissance were to develop in the ıture. . . . By the precept and theory of his "Utopia," ore cherished and added power to the new light." [20] is friend and preceptor Linacre was the first hysician to make practicable the ideas of Roger acon in English medicine. He could not, or did not, mself practise them, but he implemented them ithin the limitations of his day; and the spirit of s institutions has expressed itself in four centuries such way and form as to give us our present prehension of the splendour, the amplitude, and the ast scope of the science and art of medicine.

If it be permissible to attempt a generalisation it ight fairly be said that four advances in English edicine are indirectly attributable to Linacre's initial fluence. In the sixteenth century the Renaissance rried with it a return to Aristotle and to Nature; e previous expansion of anatomy under Vesalius lminated in the seventeenth century in the fuller derstanding of physiology under Harvey; the eat naturalists and medical practitioners of the ghteenth century, of whom John Hunter was chief, ought into application the new physiology and thology in searching for the actual causes, circumances, and natural healing of disease; and the neteenth century from beginning to end was the riod of the organisation of the profession of medicine, th by itself and by the State, for the welfare of the mmonwealth, an organisation initiated by the llege of Physicians. None of these four immense steps human progress was narrowly confined to the period its introduction, and indeed the twentieth century abodies them all. If we ponder upon this amazing ries of events we shall find in it not only the ermath of the Renaissance, but the philosophic sis and object of medicine itself. The fundamental rpose of medicine is not to cure disease but to event it. Even Linacre and Sir Thomas More ew that the future well-being of the English people y with simple methods of prevention. Yet the actice of that prevention is still widely disregarded. "In the world of Nature," said Balzac, "the methods e very simple. It is the result that is great."

The Oxford Reformers and their successors down to arvey seem to say to us: "Follow the Greek spirit, arch out the secrets of nature, find out by the perimental method her laws, and be obedient to em." That is the true science and the only wise atesmanship. It cannot be doubted that Jenner, steur, Lister, and Allbutt would have said the ne. It is this mode of approach which has given : (*a*) the return to Nature, (*b*) the application of ysiology, (*c*) the new knowledge of the cause and cumstance of disease and its healing by immunity, d (*d*) the organisation of science in behalf of the rvival and development of man. These, and not e particular methods of their application, are the ential principles of preventive medicine. The ways d means of its practice and organisation will be nifold and diverse; some will be discharged by the ysician, some by the layman, some by the comnity. Our path will take us into all fields of knowge and all spheres of human society. We shall rk in Aristotle's double track of the one into the ny and the many into the one.

> "It may be that the gulfs will wash us down;
> It may be we shall touch the Happy Isles."

In spite of Linacre and the greater explorers who llowed in his train, we in England have been slow learn the lesson of the Oxford Reformers that only the growth of mind and soul is a nation great and e, only by seeking the truths of Nature and integrati them into a unity can we rightly belong to the gdom of life.

[20] Great Englishmen of the Sixteenth Century. Sidney Lee. 07, p. 33.

RADIUM TREATMENT IN CARCINOMA OF THE MOUTH AND TONGUE.

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DURING my first year at the Radium Institute 127 out of a total of 565 cases of malignant disease referred for treatment were suffering from carcinoma of the mouth and tongue. At the end of the year 16 per cent. of these patients were free from evidence of either local or metastatic disease, but subsequent examination of all the patients treated showed that the results were very sporadic and that a very trying reaction usually accompanied treatment. Needless to say, most of the cases were frankly inoperable, but the same applies to the majority of cases of buccal carcinoma seen in hospital practice. About 50 per cent. of the cases referred for treatment by radium are in the last stages of the disease. Often half the entire buccal cavity is involved and the tongue absolutely fixed, whilst metastatic deposits, also frequently fixed to the great vessels, are found on both sides of the neck. At the moment no attempt is made to treat this type of case.

Evolution of Technique.

In taking charge of treatment at the Manchester and District Radium Institute two and a half years ago I felt, therefore, that the problem of the treatment of this variety of malignant disease was a fairly pressing one. There seemed to be no doubt that a number of cures could be obtained, but with the methods in use results were uncertain. In an attempt to arrive at some common principle the records for a period of ten years were examined. The cases were under the care of Dr. Arthur Burrows. It was found that 51 out of a total of 812 cases were well for periods of time varying from one to nine years. It was impossible to compare the results with those of surgery, as practically all the cases were surgical rejects, but the fact that radium could accomplish that which surgery, with its comparatively perfected technique, could not, was impossible to ignore. The main point of the investigation was that in 80 per cent. of these apparent cures the method employed had been that of burying small, unscreened emanation tubes or seeds in the primary growth. These tubes are left in situ and are probably effective for about 14 days. Both β and γ rays are employed, but the common factor is a comparatively small dose per unit of application continued for a long period of time. The other methods previously employed consisted in the implantation of screened tubes for periods up to 24 hours. The tube strength varied from 10–12 millicuries per linear centimetre, and the screening from 0·3 mm. of brass to 0·3 mm. of platinum. The former screen allowed far too much β irradiation to pass through, and often caused a very painful and distressing reaction. The same criticism applies to the unscreened method—only more so. On the other hand, the method did produce results and, if the end justifies the means, can be condoned. It had a great vogue in America.

About the same time Régaud,[1] in a paper read before the first International Congress of Radiology in London, referred to results in carcinoma of the tongue which were frankly brilliant and, although I have not had the opportunity of seeing his work, I should like to pay tribute to him as a pioneer in this subject. He applied the principle of prolonged irradiation with a buried tube technique, but avoided the disadvantages of sloughing and necrosis by heavy filtration—viz., 0·5 mm. of platinum, which gives almost a purely γ type of irradiation. Hitherto at the Manchester and District Radium Institute emanation only had been used, but in view of the possibility that it might be better to use a source of irradiation of constant strength, two series of tubes containing radium

element were employed. In order that variation in screening could subsequently be obtained if necessary, removable platinum cells containing radium sulphate were employed. They measured 16 mm. in length and had a wall thickness of 0·2 mm. of platinum, and contained respectively 1 mg. and 2 mg. of radium element—i.e., 0·62 mg. and 1·25 mg. per linear centimetre. The cells were contained in pointed platinum needles, with removable screw caps, 29 mm. long and with a wall thickness of 0·4 mm., giving a total screenage of 0·6 mm. of platinum. This ensures a completely γ type of irradiation. The average period was 8–10 days, but as long as 14 days has been given. Where emanation was employed instead of radium element an initial strength of 2–2·9 mc. for the same length of tube, or a linear intensity of 1·25–1·80 was adopted. It must be remembered, however, that radium emanation tubes lose strength at roughly the rate of one-sixth per day. At the end of a week the linear intensities would therefore be 0·35 and 0·50 respectively. Thereafter the curve representing this decay flattens out considerably and approaches the horizontal.

The disadvantages of emanation, as compared with radium element, are obvious. Once measured and put in a sealed container, the strength of a tube containing radium element does not vary appreciably, at any rate during a lifetime. It therefore ensures a certain strength and a constant intensity of irradiation. At centres where large numbers of tubes are being used, the use of emanation requires constant measurement if accuracy of dosage is to be obtained; this means increased danger to the personnel, both from the general and the local effects of radium. A higher initial strength of tube must also be used, which increases the risk of tissue necrosis. Régaud has stated that it is an advantage to use a gradually decreasing intensity of irradiation, but I fail to see why this should be so, nor can I adduce any evidence from my experience. The great advantage of emanation is a purely financial one. If a tube of emanation is lost, then only the value of the screen need be taken into account.

In this article the sites treated comprise the buccal surface of the lip and cheek, the floor of the mouth, tongue, fauces, tonsil, and hard and soft palates. It is easy to insert and retain tubes in all sites save the hard and soft palates; the type of tube referred to above is definitely unsuitable for these sites.

There is no such thing as a "dose" in carcinoma of the mouth. The number of tubes used depends upon the size and extent of the lesion and is a matter of experience. Under a general anæsthetic the lesion is usually found to be more extensive than would have been expected from the clinical examination, and it is as well to remember this in ordering the tubes. As Régaud [1] says, failures are mainly due to an inadequate recognition of the probable extent of the primary lesion rather than to an absence of effect, and this accounts for the majority of recurrences at the primary site. As far as possible tubes are implanted in the growing edge of the tumour, but where the lesion is a very large one they are also buried in the tumour itself. The tubes are placed about one centimetre apart. Ligatures should embrace healthy tissue where possible, otherwise they tend to cut through prematurely.

Anatomical and Pathological Considerations.

The problem as a whole is a complex one, and it is impossible to refer to more than general principles. Implantation of screened tubes is adopted for the primary site, but there remain the lymphatic nodes and the intervening lymphatic tracts between these and the primary growth. Spread can occur either by permeation, by embolism, or by both. If spread is by permeation then treatment must be directed to all three zones, but the view generally held is that metastasis is usually embolic, in which case the main problem is the primary site and the lymphatic gland area only. Once the disease has reached the lymphatic gland area the field is much wider, as it is impossible to foretell accurately which group of glands will be affected. Broadly speaking, metastases from the floor of the mouth and the anterior third of the tongue will be in the submental, submaxillary, and upper deep cervical groups of glands; from the fauces, tonsil, and middle third of the tongue in the submaxillary and upper and lower deep cervical groups, and from the base of the tongue in the upper and lower deep cervical groups. When a lesion has crossed the mid-line infection of one or both sides can occur.

The ideal method would be an external application which would cover the whole of the lymphatic drainage area on both sides of the neck, but unfortunately no uniformly satisfactory technique has as yet been developed, and most experienced workers still rely on surgery combined with irradiation where the glands are palpably involved. In quite a number of early cases no metastasis occurs, and prophylactic irradiation can be given by means of external applicators for periods up to three weeks. This method has not been employed to any extent at this centre, owing to restricted facilities. A careful system of examination at monthly intervals is adopted and, if glandular enlargement occurs, a block-dissection combined with implantation of radium is carried out. The alternative procedure is implantation of tubes on the same lines as for the primary lesion, but the surgical exposure necessary to implant in all the possible sites of spread is so great that a block-dissection might as well be done.

In a few cases in which the primary growth has resolved, and in which the glands have been too fixed for surgical removal, implantation has been resorted to, with comparatively good results. It is felt, however, that in these cases metastasis must have been limited to the palpably enlarged glands, and at present I would only recommend it in inoperable cases and in cases in which the condition of the patient rendered a very extensive dissection inadvisable. The block-dissections carried out are thorough, and include the removal of the internal jugular vein and the sterno-mastoid. As an onlooker and assistant at this procedure I am convinced that the routine removal of these structures accelerates the operation, gives greater access, and accomplishes a more thorough clearance of both anterior and posterior triangles than any effort to preserve them. When this operation is completed 8–12 tubes, containing about 6 mc. of radium emanation and screened by 0·8 mm. of platinum, are implanted in the wound, concentration being directed usually to the area deep to the parotid and angle of the jaw, and to whichever gland-bearing area is most likely to be affected. The silk threads attached to the tubes are brought out at the lower end of the cervical incision, and act as excellent drains. They are removed in three to four days' time. The primary lesion has invariably been dealt with in the first place.

A number of workers, including most of the French school, advocate the treatment of the lymphatic area before the primary lesion, either by dissection followed by prolonged external irradiation, or by external irradiation alone. They do so on the ground that the presence of radio-active sources in the mouth may have a stimulating effect on distant deposits in the lymphatic zone; it is a widely held theory that irradiation which is effective over a small area only may have a stimulating effect on outlying parts. I can, however, only recall two or three cases in which this seemed probable and other causes may have been operative. From a surgical standpoint it is obviously better to deal first with a source of sepsis, and from a pathological standpoint with what must always be a source of malignant emboli.

Diagnosis.

By far the largest number of cases of carcinoma of the mouth and tongue are seen in men—97 per cent. in my own experience—and the persistence of any form of ulceration in the mouth for more than a week or two in a patient over 30 years of age should arouse a strong suspicion of malignancy. The result of a Wassermann reaction is rapidly obtained with the

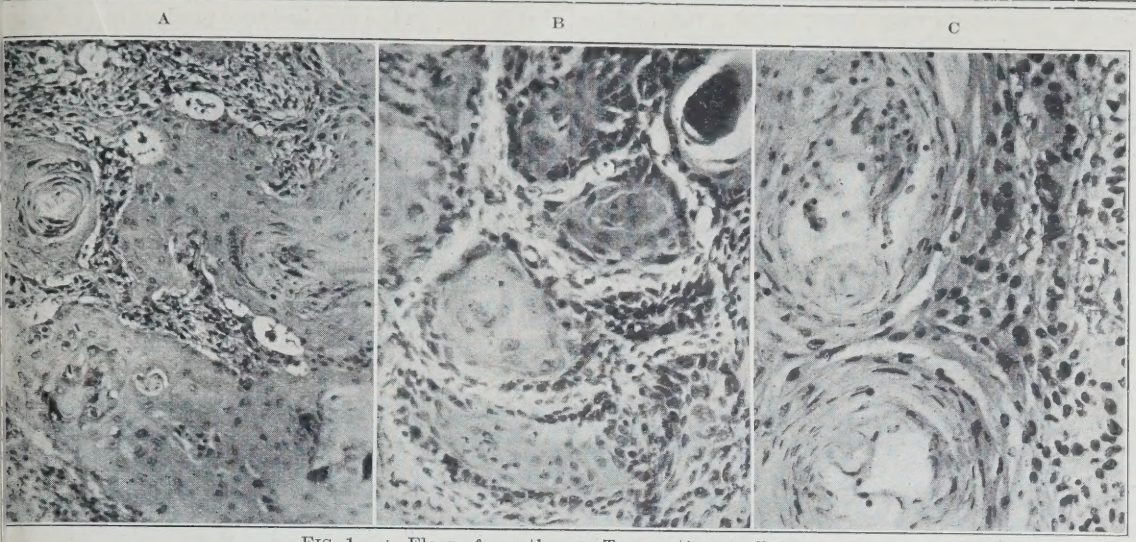


FIG. 1.—A, Floor of mouth. B, Tongue tip. C, Palate.

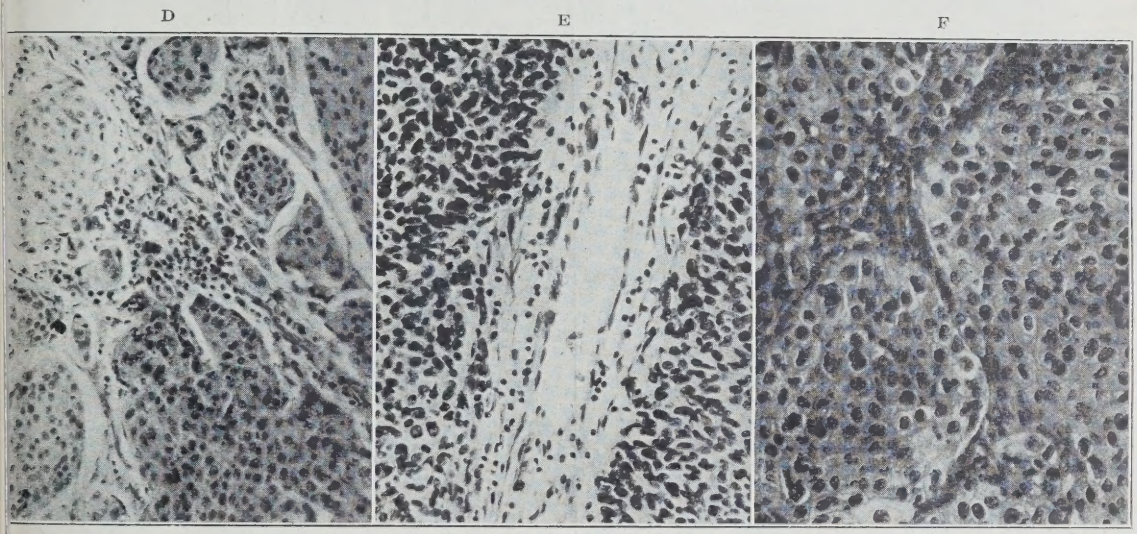


FIG. 2.—D, E, F, Base of tongue.

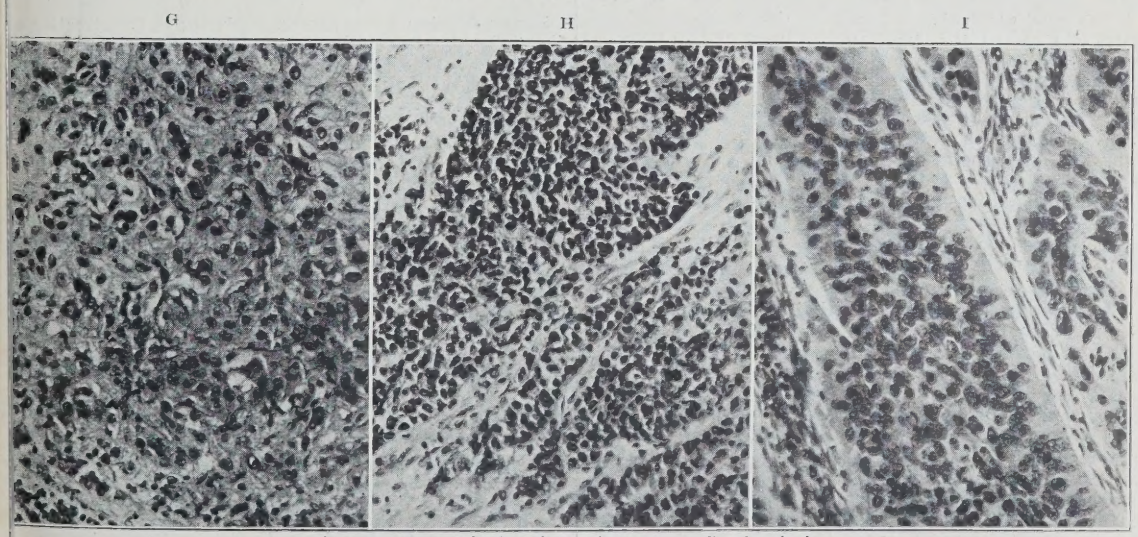


FIG. 3.—G, H, Middle third of tongue. I, Cervix uteri.

Figs. 1, 2, and 3 are microphotographs showing the variability in type of squamous epitheliomata met with in the buccal cavity in different sites. A typical section from a case of carcinoma of the cervix uteri (Fig. 3 I) is included for comparison with those of the base of the tongue. Both are undifferentiated in type and radio-sensitive. In all cases, save that from the cervix, sections were taken from the secondary deposits in the neck.

facilities available in these days, whilst a tuberculous ulcer is usually secondary to a fairly obvious pulmonary lesion. I condemn wholeheartedly the removal of a piece for section as incomplete surgical operations in malignant disease tend both to accelerate local growth and to favour metastasis; very few surgeons would incise a cancer of the breast without proceeding immediately to a radical amputation.

Naturally a surgeon must be absolutely sure of his diagnosis before performing a hemi- or complete glossectomy, but radium treatment is a conservative method which causes little or no impairment of function. To the criticism that one should hesitate to perform block-dissection unless the exact nature of the primary lesion is known, I reply that the majority of patients are elderly and that, unless palpable glands are present, a conservative and expectant attitude is actually adopted. The persistence of palpable glands after the disappearance of the primary lesion is sufficient ground for the surgical operation, and these glands usually afford positive evidence of malignancy. The use of two divergent methods of treatment for the same condition—viz., radium for the primary lesion and surgery plus radium for the lymphatic area—is justified by the following facts. By virtue of its position cancer of the mouth is rarely capable of wide excision. On the other hand, metastasis occurs along a system, so to speak, of pipes and cisterns. Before the walls of this system have been invaded it should be an ideal field for surgical treatment, so long as spread is embolic and not by permeation.

Histology.

Broadly speaking, carcinoma of the mouth and tongue is a squamous epithelioma, and the usual impression given by text-books is that it is well differentiated with an abundance of cell nests and epithelial pearls. Clinically, however, impressive results were obtained, on the primary site, at any rate, in a group of cases in which the lesion was localised at the base of the tongue. From the point of view of accessibility and visibility this is the worst site in the mouth, and it is difficult to suture or implant tubes here. Yet seven out of ten primary lesions resolved, which was much the best percentage figure obtained for any site. As sections from the primary site are not taken only three cases have been examined, the material having been obtained from the glands removed. In each of the three cases sectioned the slides show a highly cellular, undifferentiated type of growth with no cell nests or epithelial pearls, closely resembling carcinoma of the cervix uteri, which is also highly radio-sensitive (Figs. 1, 2, and 3). Ewing's "Neoplastic Diseases"[3] states that "embryonal forms of epithelioma arise in the base of the tongue, tonsil, and pharynx, but their exact structure is undetermined. The cells lack squamous characters and they grow in columns or in distant alveoli." Quick and Cutler[4] have recently drawn attention to a group of 14 cases of intra-oral tumours which they designate "transitional cell carcinoma." Of these 10 were found in the tonsil, 3 in the base of the tongue, and 1 in the cheek. Clinically metastasis was widespread and early, and they were extremely sensitive to irradiation. The highly responsive group at the base of the tongue in my series probably belongs to this category.

The lesions seemed to fall into three groups: (*a*) involving the tip and anterior third; (*b*) arising at the base of the tonsil, tending to involve the middle third of the tongue and spreading to the tonsil and fauces and floor of the mouth; (*c*) involving the base of the tongue.

Of 76 cases in which the tongue was involved and treated 14 were in class (*a*), 52 in (*b*), and 10 in (*c*). Two more cases in class (*a*) had been dealt with surgically elsewhere, the patients being referred for treatment of the metastases. It is of interest to note that in 8 of these 16 cases in class (*a*) there was positive and in 5 cases strongly presumptive evidence of syphilis. Although syphilis is undoubtedly an important ætiological factor in the production of carcinoma of the tongue, clinical evidence suggests that it must in the first instance produce local damage. A positive Wassermann reaction, unless a local lesion is present, does not necessarily indicate that syphilis is the causal or predisposing factor.

The histological types in the different sites were as follows:—

Tongue: Tip and anterior third: well differentiated and highly keratinised type. Base of fauces: indeterminate types—some differentiated, others undifferentiated. Base of tongue: highly cellular and undifferentiated.

Floor of mouth: Highly keratinised.

Palate: Differentiated and undifferentiated.

Cheek and lip: Highly keratinised.

Figs. 1, 2, and 3 show the variations in type and also the resemblance of a typical carcinoma of the cervix uteri to those at the base of the tongue.

FIG. 4.

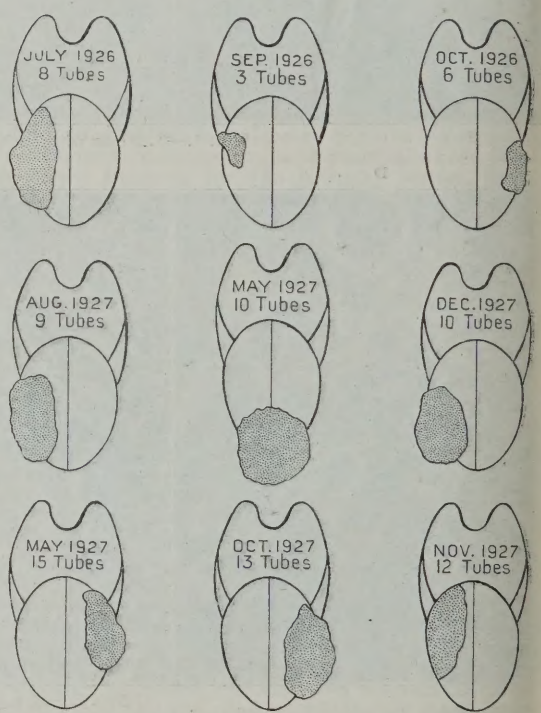


Diagram forming a key to Fig. 5. It shows the situation and extent of the primary lesion in nine cases of carcinoma of the tongue on the dates given. The photographs, taken in March, 1928, show the good functional result as judged by ability to protrude the tongue. There is no sign of local or metastatic disease in any of these cases. The number of tubes implanted gives some idea of the size of the respective primary lesions.

Reaction, Complications, and Sequelæ.

The reaction, if platinum 0·4 to 0·5 mm. is used, is not severe and is hardly noticed by the ordinary type of hospital patient. As a rule, by about the fourteenth day the treatment zone becomes coated with a deposit or adherent exudative membrane, which is best compared with the late fibrinous deposit over the pleura of a patient dead of lobar pneumonia. It is greenish-yellow in colour and is adherent, and yet it is by no means a slough. It usually disappears in about four to six weeks after treatment, when the indurated zone becomes softer, but probably three months elapse before the area treated becomes as supple and soft as the ordinary healthy tissues. Occasionally, probably from faulty distribution of tubes, tissue necrosis occurs, is accompanied by severe pain, and the formation of a depressed ulcer, covered by a tough, adherent, green slough and extremely tender to the touch. There is a surrounding zone of induration and sometimes only experience can decide whether this induration is due to the persistence of the causal factor or to an inflammatory thickening. Some of the

nch school advocate protection of the bony parts, ich are said to be especially prone to necrosis npared with the softer tissues. It is quite a feat endurance to tolerate the presence of what amounts a pin-cushion in the mouth for a week or more. A d mould to the alveoli would increase this dis-nfort, and in my experience is unnecessary. Profuse morrhage has accompanied treatment in two tances, but occasioned no anxiety. It was probably to ulceration into the lingual artery.

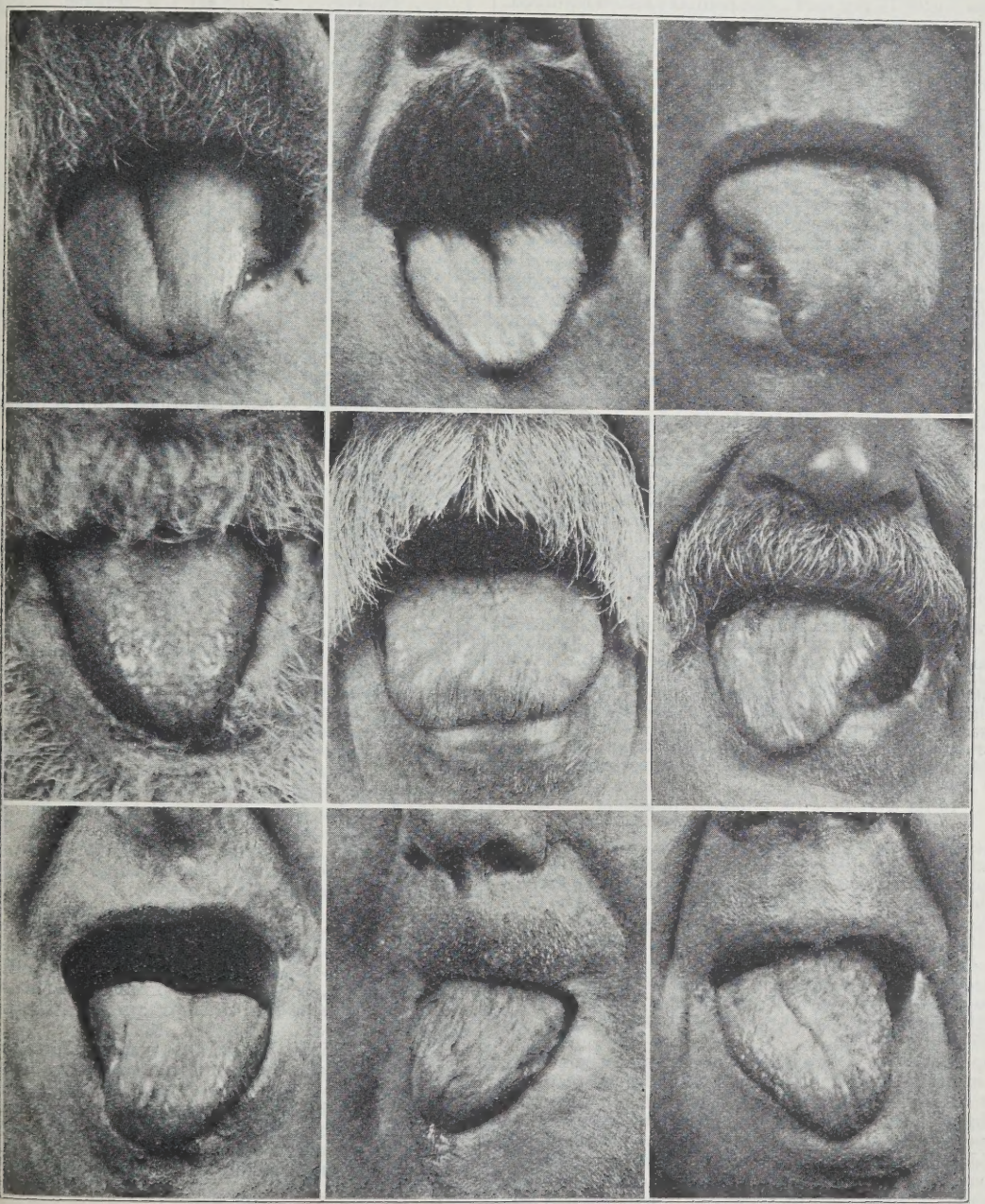
Results.

The results in the primary lesion are appended. here a lesion involved more than one site it was included under the various headings, so that some cases appear more than once.

—	Well.	Total.	Percentage well.
Tongue	34	75	46·66
Fauces and tonsil	10	36	27·77
Floor of mouth	14	42	33·33
Hard and soft palates ..	11	36	30·50
Cheek and lip	11	26	42·0

On the whole this corresponds with the ability to retain tubes, with the exception of the floor of the

FIG. 5.



Photographs taken in March, 1928, showing good functional results. The original site of the growths, and the time at which treatment began, may be seen from Fig. 4, which forms a key to the above photographs. In each case it will be seen that the tongue as a whole is drawn over towards the side of lesion, whilst the tip is turned slightly towards the opposite side.

mouth, where bone is often involved; this constitutes a bad prognostic feature. A modification of the type of tube will probably bring about better results in the palate, fauces, and tonsil. As a rule there is very little tissue here in which to implant tubes and the sutures tend to cut through.

An analysis of the 1926 results showed that 40·8 per cent. of those whose treatments continued for seven or more days were well, compared with 22·8 per cent. of those treated for less than seven days. A minimum treatment of seven days has therefore been the aim in subsequent cases.

The results of treatment can be variously stated. Eighty cases were treated during 1926 and of these 22, or 27·5 per cent., are still free from local or metastatic evidence of disease. At the end of 1926 the percentage had been assessed at 25 per cent. In 31 cases, or 38·75 per cent., the primary lesion resolved. In 29 cases, or 36·25 per cent., there has been no evidence of recurrence at the primary site.

Seventy-four cases were treated during 1927. Twenty-six of these, or 35 per cent., show no signs of local or metastatic disease. In 34 of these, or 45·9 per cent., the primary lesion resolved. Some of the cases will probably resolve later.

Forty-eight cases treated during 1926 and 1927 are at present under observation and have no local or metastatic signs of disease. The main point is that, by means of a fairly uniform technique, or at any rate by the employment of one principle of irradiation—a small unit dose for a comparatively prolonged period of time—it is apparently possible to cure a considerable number of patients suffering from what was clinically undoubted buccal carcinoma. In 43 per cent. of these cases there was a positive histological diagnosis, chiefly obtained from secondary deposits in the neck. In an additional 16·6 per cent. of cases there was a negative Wassermann reaction. The diagnosis was purely clinical in the remaining 40 per cent. of cases.

It is impossible to refer in detail to all the successful cases, and the following one is selected for several reasons. In the first place, surgery was impossible, so that there was no question of an alternative method of treatment, except X rays and lead. Secondly, it was a very advanced case and illustrates what can be done and what may be done more frequently in the future if technique improves and experience ripens.

July 20th, 1926: Duration eight to nine months. Referred by Mr. Geoffrey Jefferson. Tongue fairly mobile, protruded to right. There was an indurated lesion with central ulceration extending from the base of the tonsil to the epiglottis and crossing the middle line, involving practically the whole of the base of the tongue. There were three hard, enlarged glands in the right side of the neck, two in the right submaxillary triangle, and one in the right upper deep cervical group. One gland in the left upper deep cervical group was enlarged.

10 Ra E=1 Pt. 6/10 } inserted in base of
1 Ra E=2 Pt. 6/10 } tongue for nine days.

Sept. 24th: No sign of growth in tongue.
Oct. 20th: Block-dissection by Mr. Jefferson. Sixteen radium emanation tubes of 6 mc. each, screened by Pt. 4/10, were implanted in the wound and left for four days.
Nov. 3rd: Similar procedures on left side.

8 E.T.'s=7 each Pt. 0·8 mm. } being implanted
5 ,, =6 ,, Pt. 0·5 mm. } for three days.

A section from a gland from each side of the neck showed an undifferentiated type of squamous epithelioma. The patient was well in February, 1928, 18 months after first coming under treatment.

The results are admittedly too recent to be claimed as more than apparent cures, but they are results in an inoperable type of case and they confirm the continental experience of Régaud among others, and Evans and Cade [2] in this country. Functionally considered, they are almost perfect, especially in comparison with those of surgery of the tongue. Although a good deal of selection is exercised a large number of the cases claimed as apparent cures are very advanced and absolutely beyond the hope of surgery. If, therefore, radium can effect the disappearance, even for a year, of all clinical signs of the disease it has surely a claim to consideration in th early and operable types of case, especially considerin the poor results from surgery and, in the case of th tongue, the great impairment of function.

Results in 1926. *Results in 1927.*

Case.	Site.	Time well in months.	Treatments.	Case.	Site.	Time well in months.	Tr
1	Tongue.	27	1	1	Tongue, base.	14	
2	,,	27	1	2	,,	15	
3	Tongue and mouth (floor).	27	2*	3	Mouth, floor.	13	
				4	,,	15	
4	Hard and soft palates.	27	1	5	Fauces.	12	
				6	Cheek.	11	
5	Palate.	24	1	7	Tongue.	7	
6	Fauces and tongue.	24	1	8	,,	9	
7	Mouth, floor.	24	3*	9	,,	10	
8	Tongue.	20	1	10	Cheek.	7	
9	Tongue, base.	21	1	11	Mouth, floor.	7	
10	Palate.	21	1	12	Fauces and cheek.	11	
11	,,	22	1	13	Cheek.	7	
12	Tongue.	21	1	14	Tongue and mouth (floor).	11	
13	,,	20	1				
14	Fauces and palate.	20	1	15	Mouth, floor.	11	
15	Cheek.	19	1	16	Palate.	7	
16	Palate, fauces, and tongue.	18	2*	17	Tongue.	7	
				18	Cheek.	11	
17	Mouth, floor.	18	1	19	Palate.	7	
18	Tongue.	18	2	20	Cheek.	7	
19	Palate.	17	1	21	Tongue.	5	
20	Lip.	17	1	22	,,	4	
21	Cheek.	17	1	23	Tongue and mouth (floor).	4	
22	Tongue, palate, and fauces.	15	1				
				24	Tongue.	4	
23	Tongue.	17	2*	25	Mouth, floor.	5	
				26	Palate.	4	

Cases marked * developed radium necrosis which later clear up. It is significant that all except one of these cases had mo than one application. Otherwise it is obvious that in by f the greatest number of cases the primary growth resolved aft one treatment.

Future Progress.

(*a*) *The Primary Site.*—I believe with Régaud that a long source of irradiation in a buried tube preferable to a short one, and I suggest that needl employing an active length of 2·5–3 cm. would produ better results in the more advanced types of cas Apart from this I doubt whether there will be ar improvement, except such as experience furnishe in the treatment of this site. Especially for th reason I regard the percentage of apparent cur obtained in the series detailed above as much too lo Probably an attempt is made to treat too many cas with the facilities available.

(*b*) *The Lymphatic Area.*—The results from mo centres are disappointing, but I intend to adopt t method of prolonged external irradiation in the radi sensitive type met with at the base of the tongue. is apparently difficult to obtain a sufficiently inten depth-dose in the more resistant types witho damaging the skin too severely. It may be th comparatively restricted facilities account for the results, and certainly the method has not be sufficiently tried in Manchester.

(*c*) *Visceral Metastases.*—Seeing how much mo difficult it is to deal with the lymphatic region tha with the primary lesion I can hardly conceive th visceral metastases could be treated successfully. Th are, of course, relatively uncommon in this type malignant disease and most frequent in the undiffe entiated types.

I do not think that a long period of irradiation necessarily the only useful method in radiotherap I believe that greater uniformity of results a better results in buccal carcinoma are achieved by but in some other situations, as, for instance, carcinor of the cervix uteri, other factors must be taken in account and on occasion call for a "split" method application.

I wish to acknowledge with thanks the help whi has been freely given by the honorary surgical sta of Ancoats Hospital, Christie Hospital, Manchest Royal Infirmary, and Salford Royal Hospital, in su

rgical work as was necessary in dealing with the mphatic area, and in particular to Mr. W. R. Douglas, o has performed the block-dissections at the stitute. Dr. C. Powell White has kindly allowed s laboratory assistant, Mr. H. Taylor, to prepare e microphotographs which are shown.

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CUTE RHEUMATISM IN CHILDHOOD.

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THE problem of acute rheumatic infection in ldren is one which in recent years has been eiving more and more attention. During 1927 the dical Research Council and the Ministry of Health ve each issued publications which deal very com- hensively with the many aspects of the question. A subcommittee of the British Medical Association s issued two long reports [1] and contemporary dical literature is rich in references to rheumatism childhood. The annual reports of the chief medical cer to the Board of Education have for many years lt specially with the subject of rheumatism, and current issue [2] just published is no exception. at this problem has become a matter of general cern is obvious from the references to rheumatism ch are to be found in the annual reports for 1926 many school medical officers throughout the ntry. There is general agreement that rheumatic ases contracted in childhood are responsible for ery large number of deaths every year. G. A. an [3] and A. P. Thomson [4] say that half of the 00 deaths from heart disease which occurred in gland and Wales in 1924 were of rheumatic origin. ey Coombs [5] is of opinion that all deaths from rt disease under 40 years of age may be ascribed rheumatism. It is very probable that at least 00 deaths occur annually in England and Wales n cardiac disease following upon acute rheumatic ase—a figure exceeded only, in years when influenza ot epidemic, by cancer and tuberculosis. Whilst results of juvenile rheumatism are generally gnised, there is not the same measure of agree- nt concerning the relative significance of various ors in the production of the disease. Thus the lical Research workers [6] found that an unhealthy e of the tonsils was not an essential factor in the luction of juvenile rheumatism and that tonsil- omy was no guarantee of immunity to rheumatism. s important to remember that these findings were d on an investigation which included a large rol series of observations made on non-rheumatic dren. The B.M.A. subcommittee's report, on the r hand, considers the disease as essentially ciated with tonsillar sepsis and alleges that nanent heart trouble never develops after ton- ctomy. The Medical Research Council's inquiry d that dampness was only slightly more frequent he houses of rheumatic children than in those of control series, whereas the B.M.A. report stresses importance of this environmental factor in the ation of the disease. Direct contagion is not ounted as a possible factor by the Medical earch Council workers who produce figures con- nt with the theory of infectivity, but the B.M.A. ommittee definitely regard this factor as being o practical importance. It is clear that any her investigations among rheumatic children ied out with the object of elucidating this aspect he problem must be balanced by a series of observations relating to a similar group of non-rheumatic children.

Rheumatism in Cardiff School-children.

During 1927 a special inquiry was made into the factors associated with rheumatic infection among Cardiff school-children. Cases for investigation were selected from the current departmental records, there being referred for special examination all cases: (1) in which cardiac disease existed or was suspected; (2) suffering from or giving a history of rheumatic manifestations; and (3) whose recent or remote absence from school had been medically certified as due to a rheumatic manifestation. Obviously the first selection included many cases of congenital cardiac disease, habit spasm, functional disorders, &c., but it was considered wise to spread the net as reasonably wide as possible. The result was that out of 400 or 500 children specially gathered in this way some 214 were found to present positive and unequivocal evidence of rheumatic infection.

For the purpose of this inquiry the mere mention by the parent of growing pains was not accepted as evidence of rheumatism. Only definite prolonged or repeated pains in limbs were so regarded. The choreas had been observed and recorded by a medical officer, the heart condition had been detected at school inspection or clinic, rheumatic fevers had been certified by a private practitioner and corroborated by the existing sequelæ. Any case which showed only one factor which in itself was doubtful was excluded from the present survey. Yet it would be very unwise to restrict our conception of rheumatic disorders in childhood to the cases showing unequivocal clinical signs. In every affection all grades of severity are met with, and it is conceivable that some cases of mild rheumatism showing no clinical signs at the moment of examination were excluded from this inquiry. Reference to Table I. will show how few were the manifestations of this infection which came once and not again. One of the most striking, though not unexpected, results of this inquiry is the tendency shown by rheumatism to recur in some form or other.

A control group of children were also examined. These unfortunately were limited as to numbers by a sudden emergency, but it was possible to examine 116 who had no evidence of rheumatism and who had not any affection of the heart. These children were selected at random and were all of school age. In addition to very full inquiries into the personal and family history of both rheumatics and controls their houses were visited by sanitary inspectors who, to avoid bias, were not informed of the association of the houses with this inquiry. Among other things, detailed knowledge was thus obtained as to the extent, nature, and cause of dampness in the houses both of rheumatic and control cases.

General Symptomatology.

The rheumatic manifestations observed were classified under the following heads—viz., Rheumatic Pains, Rheumatic Fever, Chorea, Rheumatic Carditis, Arthritis, Erythema Nodosum, and Other Manifestations. Of the 214 rheumatic children examined 133 had rheumatic pains at some time or other, 65 had rheumatic fever, 129 had rheumatic carditis resulting in permanent valvular disease, 44 had rheumatic carditis which had not at the time of examination led to permanent valvular disease, 9 cases showed erythema nodosum, and 27 cases showed arthritis. A distinction is made throughout this report between permanent valvular disease and other forms of rheumatic cardiac involvement. The latter group relates to cases where definite cardiac mischief is manifested by impairment of the heart's sounds, but where sufficient evidence is not available to show clearly that the lesions are permanent.

Rheumatic Pains.—Apart from cardiac involvement this was by far the commonest rheumatic manifestation shown. Seventy-nine children started their rheumatic troubles in this way and most of the children examined had rheumatic pains at one time or another. The pains were more often experienced in the legs than in the arms and were by no

means related to the joints in all cases. A stiffness of the muscles and joints was very common.

Rheumatic Fever.—Fifty-five children had this form of manifestation at onset and ten others developed it after a definite onset as rheumatic pains or chorea. This manifestation tended to come early in the disease, if at all. It less often followed on a choreic onset than it did an onset associated with rheumatic pains. In Cardiff no child who developed rheumatic fever failed to have a recurrence of rheumatism in some form or another. At least two attacks of rheumatic fever occurred in nine cases showing this manifestation.

Chorea.—Forty-three of the 214 children started rheumatism in this form which differed from all others in being relatively less liable to lead to other manifestations. In over 20 per cent. of the cases with choreic onsets no further rheumatic signs or symptoms developed.

Rheumatic Carditis.—129 children showed permanent valvular disease: 101 as mitral regurgitation, 23 as mitral stenosis, 3 as aortic regurgitation, and 2 as aortic and mitral regurgitation. Included in this group are four children who had well-marked signs of adherent pericardium. It is a fact worth recording that in at least 41 cases the initial diagnosis of rheumatic carditis was made by an assistant school medical officer during the course of routine inspection or at the clinic. It is safe to say that many of these children would never have been ascertained had school medical facilities not been available. Forty-four of the 214 rheumatic children examined showed evidence of the milder type of cardiac involvement (myocarditis, temporary dilatation, &c.). Eight cases started rheumatism in this way, and of these eight four developed permanent valvular lesions.

Arthritis.—Only ten children showed this symptom at onset, but 17 others developed arthritis during the course of rheumatic infection. Arthritis was usually preceded by periods of pain and stiffness in the joints. Of itself arthritis did not seem to be a manifestation prone to lead to cardiac involvement.

Erythema Nodosum.—This interesting manifestation occurred in three cases as a form of rheumatic onset. In six other cases it developed during the course of the disease.

Other Manifestations.—Twenty-three cases of definite rheumatism (22 involving the heart valves permanently) began without any distinct onset. It may be mentioned that in the search for a possible origin of these insidious cases histories of even sore-throat were generally lacking. The 22 cases were not congenital cardiacs; in every instance the lesions were left-sided and unaccompanied by the physical signs both locally and generally which are characteristic of congenital heart disease.

TABLE I.—*Type of Onset and its Relation to Subsequent Manifestations.*

Cases.	Mode of onset.	Subsequent manifestations. Heart symp.	Rheum. fever.	Rheum. pains.	Chorea.	Eryth. nod.	Other definite symptoms.	Permanent valv. disease.	Total additional manifestations.	Per cent. permanent heart disease.	No manifestations except onset.
8	Heart symp.	3	—	1	1	—	—	4	9	50·0	—
55	Rheum. fever.	6	9	23	11	1	8	41	99	74·5	—
79	Rheum. pains.	16	8	28	8	4	9	41	114	54·4	5
43	Chorea.	7	2	17	8	1	—	17	52	39·5	10
3	Eryth. nod.	1	—	3	—	—	—	1	5	33·3	1
3	Other definite symp.	5	—	4	—	—	2	3	14	100·0	—
23	Indefinite symp.	1	—	6	2	—	—	22	31	95·5	—
214	Totals ..	39	19	82	30	6	19	129	324	60·2	16

Total manifestations per case = 2·5.

Table I. shows that onsets as rheumatic pains, rheumatic fever, and chorea were by far the most common. Next came the cases of quiet origin. The remaining cases which started with heart symptoms, erythema nodosum, &c., are relatively few. The last column in this table shows that out of the 214 cases only 16 had a single manifestation. Ten of these 16 cases were choreas, 5 were cases of rheumatic pains, and one a case of erythema nodosum. The liability of every form of onset to involve the heart is also brought out in this table. Rheumatic fever may be taken as the manifestation most prone to do this; a choreic onset would not seem at all so prone to lead to heart involvement as an onset in the form of rheumatic fever.

Age at Onset.

In 186 of the 214 cases it was possible to ascertain the age at onset of rheumatism. It was found that in 174 children (93 per cent.) it had commenced at school age as usually observed elsewhere. (Table II.)

TABLE II.

Age at Onset of Rheumatism at—

2 years	1	7 years	27	12 years	1
3 „	3	8 „	19	13 „	—
4 „	8	9 „	20	Uncertain ..	2
5 „	25	10 „	29		
6 „	25	11 „	16	Total ..	21

School age (commencing at 5 years) 174 out of 18 known cases = 93 per cent.

Season of Onset.

In 152 cases the season at which rheumatism developed was capable of being ascertained (Table III.)

TABLE III.

Season of Onset (all Rheumatic Manifestations).

	Nos.	Approx. per cent.
Summer	45	30
Autumn	17	11
Winter	59	39
Spring	31	20
Total	152	100

It is impossible from the small numbers investigated to draw any inference as to the effect of season. R. Miller says that there is a definite seasonal incidence in England between October and March, and the Medical Research report [6] suggests that the peaks in the acute rheumatic fever curve are in February and November. The Cardiff figures tend to support these views—almost 60 per cent. of cases investigated began between October and March, but if the choreic onsets are excluded the tendency of rheumatism to develop in the cold, wet months is a little more obvious. When the seasonal onset of chorea alone is considered it is interesting to find that there is more likelihood of a child developing this manifestation towards the end of a school term.

Throat Conditions and Acute Rheumatism.

The influence of throat conditions on the acute rheumatic infection of 214 Cardiff children was investigated in this inquiry and at the same time a control group of 116 non-rheumatic children were examined and subjected to the same standards.

(*a*) *Size of Tonsil.*—To say what is or what is not a healthy tonsil is a very much more difficult task than to record whether or not the tonsil is of normal size, slightly enlarged, moderately enlarged or very much enlarged. On the assumption that the size of the tonsil, in the absence of acute inflammation, is a reliable indication as to the health of the organ, a careful note of the size of the tonsil was made in each case. When the tonsils had been removed this fact was also noted and the effect (if any) of the removal upon rheumatism investigated. (Table IV.)

TABLE IV.—*Size of Tonsil.*

Tonsils.	Rheumatics. Numbers and per cent.	Controls. Numbers and per cent.
Normal	74 (40·8)	54 (46·3)
Slightly enlarged ..	43 (23·7)	31 (26·7)
Moderately enlarged ..	30 (16·5)	13 (11·2)
Enlarged	17 (9·3)	10 (8·6)
Removed	17 (9·3)	8 (6·9)
No remark	33 —	— —
Totals	214 (99·6)	116 (99·7)

There is no significant difference between the two groups. If enlargement is to be taken as the expression of past infection it is clear that the Cardiff figures do not support the conclusion of the B.M.A. subcommittee,[1] who claim that the relation between rheumatism and tonsillar infection is a very close one.

(*b*) *Incidence of Sore-throat.*—Sore-throats were classified as occurring "frequently," "occasionally," "very rarely

ace only," and "never." The same system was adopted h the control group of children. (Table V.)

TABLE V.—*Incidence of Sore-throats.*

Sore-throat.	Rheumatics. Numbers and per cent.	Controls. Numbers and per cent.
ever	129 (60·2)	82 (70·6)
nce only	7 (3·7)	3 (2·5)
ery rare	9 (4·1)	3 (2·5)
ccasional	36 (16·8)	15 (12·8)
requent	33 (15·4)	13 (11·2)
Totals	214 (100·2)	116 (99·6)

ere again there is no significant difference in the matic and control series in any one group. All that can aid is that there is a definite tendency for sore-throats e a little more frequent among the rheumatic than the rol groups. The association between enlargement of il and sore-throat with rheumatism which has long been is not clearly borne out by the Cardiff figures.

Influence of Tonsillectomy on Rheumatism.

triking differences of opinion exist as to the value onsillectomy in the prevention and treatment of matic diseases in children.

. Lawrence,[7] after a detailed analysis of 85 children, rved for three and a half years after their tonsils were ved, considers that tonsillectomy is the most important sure at present available for the prevention of acute matic fever and the allied rheumatic manifestations, e A. P. Thomson [8] says definitely: "The value of early plete tonsillectomy in the prevention of rheumatic t disease is established." On the other hand, the ical Research workers consider that neither cutting nor leation is any guarantee of immunity to rheumatism. ing regard to the advocacy of tonsillectomy for any every rheumatic manifestation it would seem that e is need for caution until this phase of the rheumatic lem is further explored.

regards tonsillectomy in the treatment of rheumatism, t and Osman [9] have given figures which show that the ation definitely increases the risk of rheumatic recurrence, they find that the risk is much more when the operation ne after a later attack than the first. Miller,[1] whose is supported by Poynton, Paterson, and Spence,[10] ests that post-operative rheumatism is in the form of ea in 60–70 per cent. of cases, and discounts the possi- y of graver manifestations occurring after operation. rman and Wilson,[11] reviewing the recurrences of matism occurring within three years of operation on ls, gives a figure so high as 75 per cent.

the Cardiff series 17 rheumatic children had had r tonsils removed at some time or other. In he removal antedated the first rheumatic mani- tation. In 5 the removal post-dated the onset, but not prevent further rheumatic manifestations, gh it may have modified those. It is only fair to that as against the 17 tonsillectomised children developed rheumatism in spite of operation e were 3759 children similarly dealt with at the nose, and throat clinic between 1917 and 1926 , so far as is known, remained free from rheumatism.

Tonsillectomy Before Onset of Rheumatism.—Most of cases developed the first sign of rheumatism at vals of from 2 weeks to 18 months after removal:—

3 within 2 weeks 1 „ 1 month 2 „ 3 months	Five of the six developed rheumatism in the form of chorea.
2 within 4 months 2 „ 12 „ 1 „ 18 „ 2 at remote periods	None of these developed chorea.

analysis of the ten cases which showed rheumatic festations within 18 months of removal reveals that:—

f the 10 had chorea (50 per cent. as compared with 6·7 per cent. in the much larger Medical Research series).
ad permanent valvular disease.
ad the milder type of cardiac involvement.
ad erythema nodosum.
ad rheumatic pains.

fact worth emphasising is that fully half the cases loped rheumatism in the form of chorea and these the earliest cases to manifest rheumatism after removal. of the five children whose chorea followed hard on tonsillectomy only one subsequently developed permanent valvular disease, whereas of the 38 cases who developed chorea without having the tonsils removed as many as 16 subsequently developed permanent valvular disease. It would be rash to generalise, however, on evidence so slender as this.

(2) *Tonsillectomy after First Rheumatic Manifestation.*—Of these cases, 5 in number, 3 had chorea (developed after removal in 2 cases), 2 had permanent valvular disease, 1 had minor heart symptoms, and 4 had rheumatic pains subsequent to removal.

To draw any general deductions as to the influence of tonsillectomy on the origin and development of rheumatism from so small a series would be fallacious in the extreme. The conclusions of the Medical Research Council workers are, however, confirmed by the results obtained from investigating a smaller series in Cardiff.

Infectivity of Rheumatism.

661 Cardiff children (sisters and brothers of rheumatics) were exposed to rheumatic infection by living in the same house. Fifty-one of these were affected (7·7 per cent. case-incidence).

It will be noted that the contact case-incidence of rheumatism is not smaller than that of such notifiable diseases as anterior poliomyelitis and cerebro-spinal fever. Aycock [12] expresses the probability of infection with certain diseases in the following rough numerical fashion: "Of susceptible children exposed to measles 1 out of 1 develops the disease; to diphtheria 1 out of 10 develops the disease and 9 out of 10 develop subclinical immunity; to poliomyelitis 1 out of 100 develops the disease and 99 out of 100 develop subclinical immunity or immunity from abortive attacks." If, therefore, rheumatism were an infection of the same order as poliomyelitis multiple cases in families would be scarce.

It must also be borne in mind that while the Cardiff figures relate entirely to school-children contacts, they were not necessarily bedfellows of the rheumatic children. The possibility of transmission of infection, which St. Lawrence [13] speaks about, was very much greater in the London series,[6] where 382 persons *were sleeping in the same rooms* as 192 children under treatment for rheumatism, than among the Cardiff children, 661 of whom were exposed *to infection by living in the same house.*

Fitness for Ordinary Occupations.

142 of the 214 children examined were found unfit by reason of the consequences of rheumatic infection to follow ordinary occupations in after life—a percentage of 66. The employment of such of these who will survive will have to be chosen with great care and circumspection. Manual work of a laborious character will always be contra-indicated.

Social Factors and Acute Rheumatism.

The social factors including cleanliness, clothing, and maternal care were thoroughly investigated in both the rheumatic and control series. No significant differences were noted. The Cardiff findings in this respect are in agreement with those of Thomson in Birmingham, Hutchinson in London, Morrison in Bristol, and Coates and Thomas in Bath. (Table VI.)

TABLE VI.—*Housing Factors in Relation to Acute Rheumatism.*

	Rheumatics.	Controls.
Number of houses ..	.. 201	106
„ families	.. 298	161
Families per house..	.. 1·48	1·51
Rooms per family ..	.. 3·78	3·53
Total occupants—	.. 1482	769
Over 10 years ..	.. 1088	529
Under „ ..	.. 394	240
Occupants per house	.. 7·37	7·25
„ „ room	.. 1·30	1·31

This table shows that rheumatic children, as far as overcrowding is concerned, live pretty well under the same conditions as the children of the control series. The conditions as to tenancies are also very similar in the two groups; 55·7 per cent. of rheumatics live in singly tenanted houses as against 56·6 per cent. of controls. It can therefore be inferred that overcrowding in the home has little influence on the onset of rheumatism.

But there still remains the question of the influence of overcrowding on the course of rheumatism. Rheumatic children were found to be living under overcrowded conditions in 14 instances, as judged by the Registrar-General's

standard of more than two persons per room, and 13 of these children showed evidences of cardiac involvement. This result is at least suggestive that overcrowding in the home may have an unfavourable influence on the course of a rheumatic infection. If there is any truth in the theory of rheumatic infectivity one would expect to find a higher incidence of rheumatism amongst susceptible persons in such houses than in houses not overcrowded. Investigations showed that of 52 susceptible children exposed to infection when living under overcrowded conditions five contracted acute rheumatism, giving a contact case-incidence of 9·6 per cent. as compared with the general figure of 7·7 per cent.

Environmental factors—e.g., type of district, type, age, state of repair, aspect, cleanliness, and amount of exposure of house were investigated in detail for the two series, but no significant differences were noted.

Dampness in Houses.

Each house was carefully examined for any form of dampness by the sanitary inspectors. The houses of rheumatics examined were in all cases those in which the patients were living at the time when the onset of rheumatism was alleged to have occurred. Table VII. shows that a slightly higher percentage of the rheumatics lived in damp houses.

TABLE VII.

Series.	Houses examined for dampness.	Dampness detected.	Percentage damp.
Rheumatic	201	87	43·2
Control	108	41	37·9

This table relates to dampness of any form, however slight, and it should be noted that one possible fallacy in these figures is that the returns relate to dampness found in 1927, whereas in most cases rheumatism developed some years ago when the house may or may not have been damp. Some of the houses found not damp to-day may have been quite damp at the time when the child developed rheumatism, and vice versa. With this possibility of error in mind it is obvious that any differences found in the two series must be very striking to be considered significant. The difference of 5·3 per cent. shown cannot therefore be taken as evidence in support of the theory that "living in damp dwellings is a powerful predisposing factor" [1] in the development of rheumatism.

An analysis of the site of the dampness present in the houses of each series is set out in Table VIII.

TABLE VIII.—*Site of Dampness.*

Site of dampness.	Rheumatics.	Controls.
	Numbers and per cent.	Numbers and per cent.
Ground floor	43 (21·3)	13 (12·0)
Bedrooms only ..	26 (12·9)	17 (15·7)
Both	18 (8·9)	11 (10·1)
Total damp	87 (43·1)	41 (37·8)

It will be seen that any excess in the incidence of dampness amongst the rheumatic group was probably in the form of ground floor dampness. Investigation showed that this was due to the fact that rheumatics tended to live in the older type of house property which had not a damp-proof course. It is clear, however, that there is not sufficient evidence revealed by the house analyses carried out in this inquiry to justify the conclusion that damp houses of themselves play any notable part in the production of juvenile rheumatism.

A comparison may be made here between the Cardiff results and the St. Thomas's Hospital data of the Medical Research Council's report on Social Conditions and Acute Rheumatism. Table IX. gives the percentage (with standard deviation) of houses found damp classified according to type of dampness.

The figures are not significantly different. Although the houses concerned are probably similar in London and Cardiff, the districts are no doubt very dissimilar. Rather less than 6 per cent. of each group in Cardiff were found to live in congested districts and the city is devoid of slums in the true sense of the word.

TABLE IX.—*Description of Dampness.*

Description of dampness.	Rheumatics.		Controls.	
	M.R.C.	Cardiff.	M.R.C.	Cardiff
Rising damp (ground floor only)	22·0 (±2·1)	21·3 (±2·3)	18·0 (±3·8)	12·0 (±2·8
Defective roof, gutters, ceiling (bedroom only)	13·8 (±1·7)	12·9 (±2·1)	11·0 (±3·1)	15·7 (±2·9
Rising damp and defects of roof.. ..	4·0 (±1·0)	8·9 (±1·9)	4·0 (±2·0)	10·1 (±2·6
All forms of dampness..	39·8 (±2·4)	43·1 (±3·5)	33·0 (±4·7)	37·8 (±4·6

Even although living in a damp house would see not to have any influence on its onset, there st remains the question as to what part of such a environmental factor may play in the course of rheumatic infection. Does living in damp houses with the severer type of rheumatic manifestation A few facts which came to light in investigating t Cardiff cases may be worth recording.

1. The four cases of adherent pericardium (prognos grave in all) did not live in damp houses.

2. Of the 23 cases of mitral stenosis seven only lived damp houses.

3. The five cases with either aortic or aortic and mitr lesions all lived in houses that were not damp.

4. Of 124 houses investigated in respect of 129 childr found to have permanent valvular disease 53 were fou to be damp (42·7 per cent.) as compared with a dampne incidence of 43·2 per cent. for all rheumatics. In abo half the cases of valvular disease who lived in damp hous the dampness was of the ground floor variety. It cann be adduced from these figures that living in damp hous tends to produce a more serious type of rheumatic lesi than living in a dry house.

Soil and Elevation.

It was found that rheumatic children live on lo lying ground usually with a subsoil of estuarine m or clay, whereas the control children were different distributed throughout the city and were much mo frequently found to live on the better type of subs available at higher elevations. The results indica that there may be more than a casual relationsh between soil and elevation on the one hand a rheumatism on the other.

TABLE X.—*Proximity to Water.*

Series.	0–50 yards. No. and per cent.	50–100 yards. No. and per cent.	100–200 yards. No. and per cent.	200–44 yards No. an per cen
Rheumatics ..	14 (6·9)	12 (5·9)	12 (5·9)	12 (5·9
Controls	6 (5·6)	8 (7·5)	3 (2·6)	1 (0·9

There did not seem to be any close relation betwe proximity to water and development of rheumatis A slightly higher percentage of rheumatics were found live within quarter of a mile of waterways or channels, t the increase is chiefly due to children living more th 100 yards distant from water. Bearing in mind the locati of most working-class dwellings in Cardiff this slight differer in figures must be discounted. If living within 100 yards water were a predisposing factor in the development rheumatism then indeed the incidence of rheumatic affectio in Cardiff school-children ought to be much higher.

Summary of Findings.

1. No significant differences as to size of tons or frequency of sore-throats were found to exist wh a series of observations on rheumatic children w compared with a series of observations on a simi group of non-rheumatic children.

2. Chorea, permanent heart disease, and oth rheumatic manifestations were found to have de loped in several cases after tonsillectomy had be performed.

3. Some slight evidence was found in this inqu in support of the theory of infectivity of rheumatis

4. Overcrowding did not seem to predispose to t onset of rheumatism, but 13 of the 14 rheuma

dren found living under overcrowded conditions wed evidence of cardiac involvement.
. The incidence of dampness in the houses of rheumatic children was not significantly higher n in the houses of 108 non-rheumatic children.
. Ground floor dampness was found to exist more n in the houses of rheumatics (which, as a rule, e older houses) than in those occupied by the trols, but this did not seem to produce a tendency ards any particular type of rheumatic onset.
. A general dampness of the house was more often ociated with the onset of rheumatic pains than er types of onset, but the differences were not ificant.
. Dampness of houses, of whatever distribution, not appear to predispose to the onset of chorea in erence to any other type of onset.
. Living in damp houses did not predispose cially to rheumatic fever or to cardiac involvement.

is difficult to reconcile Cardiff experiences with the ngs of the B.M.A. subcommittee, which considers that lisease in industrial towns is essentially one of children g in damp rooms. Obviously any figure for dampness ne houses of rheumatics, however high, is of itself not ficant unless a comparative figure for a control group ouses relating to a suitable series of non-rheumatic ren is placed beside it.

). No close relation was found to exist between imity to water and the development of matism.

must express my thanks to Dr. Ralph M. F. Picken, ical officer of health, Cardiff, at whose request foregoing investigation was undertaken, for ly permitting me to publish these results.

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Clinical and Laboratory Notes.

CASE OF ECLAMPSIA TREATED WITH SPINAL ANÆSTHESIA.*

BY R. H. PARAMORE, F.R.C.S. ENG.,

GYNÆCOLOGICAL SURGEON, HOSPITAL OF ST. CROSS, RUGBY.

I the following case spinal anæsthesia was used st the mechanistic conception of eclampsia. If lisease be due to a too great compression of the and kidneys, whereby a capillary obstruction e blood flow through these organs occurs, then a ure calculated to reduce the tonicity of the minal walls and thoracic diaphragm should e or even cure the patient. Chloroform was to stop the fits and to permit the puncture; and sistent lateral position and complete starvation e early after-treatment were stringently insisted

married woman of 23 was admitted to hospital on 24th, 1927, at 11.30 P.M. She was well developed, and had had a child a year ago. She was seven months pregnant. A month ago her husband was called up to serve in China, and she had to give up her home and come into Rugby. This thoroughly upset her. Three weeks before admission puffiness of the face and hands had been noticed, and she complained of headaches. On the night of admission she was having supper as usual, and thinking her child was crying, left the table and went upstairs. The next thing that happened was that the people below heard a noise as of some one falling. They found the woman on the floor in a fit. A doctor was sent for, who advised admission to hospital. Before admission she had had two fits; her tongue was bitten and two teeth broken. She had a succession of fits after admission without recovering consciousness. The pulse was 104, full and bounding; respirations, 24; temperature, 98° F. At 12·30 chloroform was administered, and I saw her soon after.

By catheter, 2 oz. of highly albuminous urine came away. The lumbar region was exposed and painted with iodine; a needle inserted into the dura; cerebro-spinal fluid, apparently under normal pressure, in small quantity, was allowed to escape; and 1·5 c.cm. of a 5 per cent. solution of tropacocaine (Allen and Hanburys, Ltd.) was injected. The needle was withdrawn, the wound dressed, the chloroform stopped, and instructions given to maintain the patient on her (left) side and report at once if any further fit occurred. Nothing else was done.

I descended with the resident medical officer to his room to await events. At about half-past two we visited the patient, no report having been received. I found her in a semi-drowsy state—she had had no further fit, but had been rather restless, throwing her arms and legs about. In my presence she vomited and defæcated simultaneously, being still on her side; the visceral action was spontaneous. Her condition seemed much improved. Instructions were given that she should be maintained on her side and given nothing but water, when she could take it.

At 11 A.M. the report was favourable—the patient had had a quiet night; a further motion had been passed; she was quite rational. The blood pressure was given as 143 systolic and 100 diastolic. At 9 P.M. it was 120/80; the patient complained of headache. The total urine passed on that day (Feb. 25th) was 24 oz. From this time the further progress of the case was uneventful—except that the amount of urine passed did not exceed 30 oz. for the first four days; that the blood pressure became again raised (on Feb. 28th it was 150/110); that the fœtal heart, heard on March 1st, was not heard on March 2nd, and that the patient miscarried on March 4th. With the death of the child the amount of urine increased and the blood pressure fell; after delivery both conditions improved still more. The urine increased to over 60 oz. on some days, and the albumin, on March 8th, had gone. The patient was discharged on March 19th apparently quite well.

The method here described has not been tried in any other case, for no other up to the time of publication was available.

* eing part of a paper entitled Eclampsia and Its Treatment: xperience with Spinal Anæsthesia in One Case, and read the Obstetrical and Gynæcological Section of the Royal y of Medicine on April 20th.

NOTE ON THE TREATMENT OF TOXIC PERI-ARTHRITIS.

BY L. C. DUNDAS IRVINE, B.A. CAMB., M.R.C.S. ENG.

IT is recognised that a chronic, painful inflammation of the tissues round the joints, proceeding if unchecked to deformity and loss of power, is associated with the absorption of toxins of bacterial origin.

A great many cases in the past have responded fairly satisfactorily to removal of the teeth, but far more have gone on unchanged. It may, therefore, be worth while to place on record a series of cases, the earliest of which dates back to 1924, in which there have been marked improvement from the following course of treatment: (1) An attempt was made to deal with the bacteria themselves by vaccine therapy. (2) By a carefully regulated diet, I tried to alter the nature of the bowel contents so as to encourage the growth of the lactic acid bacillus. (3) The injured tissues were treated locally by high frequency, massage, and poultices composed of mud imported from Pistany, in Czecho-Slovakia. (4) Every possible attempt was made to increase the elimination of toxic products from the body by prescribing large quantities of fluid to be drunk

daily, and particularly by giving atoquinol (Ciba) [1] in fairly large doses for a long period. It was given in periods of three days on and three days off, always with large draughts of water, and sometimes with bicarbonate of soda (in doses of grs. 5) where the patient complained that the tablets alone caused indigestion.

Eighty-seven cases have been treated. At the first examination I devoted my attention to discovering the site of the toxic absorption. In 74 per cent. of the cases this was associated with infection of the large bowel by a pathogenic *Bacillus coli communis* and a pathogenic *Streptococcus fœcalis*. In 8 per cent. the originating bacteria were found in the tonsils; in 7 per cent. they were in the teeth, mouth, and throat; in 7 per cent. in the nose and maxillary antrum or accessory sinuses. Two of the cases were gonococcal, and in two no source of bacterial infection could be discovered.

The autogenous vaccine was usually given in 16 doses, starting with five million *B. coli communis*, with five million streptococci, or 25 million staphylococci, and increasing by steps up to 200 million in *B. coli* and streptococci respectively, and to 400 million in staphylococci. The injections were given, as a general rule, twice a week and were not followed by any severe reaction. There was sometimes an increase in the joint pains, sometimes a little general malaise. As the doses increased in size, the interval between them was lengthened until the last four were given, as a rule, at intervals of ten days.

While this was going on they were put on a diet which consisted of what one might call farm produce—milk, eggs, butter, cheese, fruit, vegetables, salads, the last with lemon-juice instead of vinegar. Fish and chicken were added if the diet was found to be too low, but no red meat, and if possible no alcohol. The fluid taken was made to exceed 2 quarts a day, taken at regular intervals, barley-water, orange-juice, or lemon-juice being the prevailing forms. Some of the cases were given milk soured by the *Bacillus bulgaricus*, and, as I have said, about six tablets of atoquinol were given each day for three days and then omitted for a similar period, and repeated. Aperients were given when necessary, but every attempt was made to substitute fruit for purgatives.

The inflamed joints, if very painful and swollen, were either poulticed with Pistany mud or, in the case of the hands and feet, actually plunged into a basin of the mud. The skin had to be plentifully smeared with vaseline to prevent the mud from adhering and burning. In one or two cases slight burns did occur which gave trouble and were a long time in healing, but eventually cleared up satisfactorily. It was found that the mud reduced the tenderness and swelling of the joints to a remarkable degree, and made it possible to manipulate them at a very much earlier stage in the treatment. Passive movement and massage was begun as soon as it could be done without pain, and it was very striking how rapidly the most severely deformed hands responded to this treatment and resumed their normal shape. Where the joints were very stiff, high-frequency was added to the massage and manipulation, and it was found that movements which had not been possible for months, or even years, were regained. The local treatment was given daily whenever possible, though at the beginning many of the cases could not stand more than twice a week, as the skin over the inflamed tissues was apt to become sore. Towards the close of the treatment many of the cases were given artificial light with very obvious beneficial results in the improvement of the general bodily tone.

[1] There was at one time a good deal of hostile feeling against this preparation after reports of cases where fatal cirrhosis trouble followed on its long-continued administration. In the course of four years, however, I have seen no case in which it gave rise to any untoward symptoms, and even a patient with an enlarged liver due to taking too much alcohol stood the treatment satisfactorily.

Of the 87 patients treated, 53 were able to resum their work without pain and have, so far, had r return; 22 were able to go back to work, but had relapse, which yielded to a further course of treatmen Of these relapsed cases, three came back for a thi course of treatment, and of the three one is having fourth course. In each of the latter cases the patie has been sufficiently relieved from pain and improv in general health to present himself, of his own accor for further treatment. Of the remaining 12, six ha proved unsatisfactory; of these six, two were tho in whom no source of infection could be found, a the remaining six have too recently completed the treatment for any definite result to be claimed.

No special discovery and no new method of trea ment is claimed for this series of cases. It is probab only the combination of the various methods treatment and the thoroughness with which th have been carried out which has led to such sati factory results. The total number treated is, course, small, and it may well be that when this h been considerably increased the percentage of tho who returned to their work will not be found to so high. But it is not unsatisfactory that so ma patients suffering from a crippling and painful disea should have improved enough to resume their wor

A NON-IRRITATING SILVER-ARSENIC COMPOUND.

By Harold O. Long, M.R.C.S. Eng.

The extreme toxicity to the tissues of preparatio of silver and arsenic is well known; because th cannot be introduced intramuscularly or subcutan ously intravenous therapy has been the one meth of exhibiting them. While the intravenous meth of administration is the ideal one, if conditions a satisfactory, it has disadvantages and distinct limit tions in certain circumstances, first on account the difficulty of finding a vein in some patients; an secondly, because of the great local reaction in t surrounding tissues if the merest drop of some co pounds escapes the lumen of the vein. This latt accident may not only produce sloughing of the tissu but it may completely damage the area for futu intravenous injections. Worrying experiences of th kind, both personal and reported by other prac tioners, led me to seek a substitute for the preparatio hitherto used in the treatment of disseminat sclerosis and other nervous diseases of obscure orig Arseno-argenticum (May and Baker) is an excelle compound with which some highly satisfactory resu have been obtained over a number of years apparently controlling the manifestation of t disease and also in greatly improving sympton Doses of 0·05 g. to 0·3 g. (increasing by 0·05 g.) ha been given intravenously in six doses at weekly fortnightly intervals each year, the patient taki courses of arsenic by the mouth periodically duri the rest of the year. The risk of continuing treatm is very great as some veins become almost impossi to find, especially if a single slight accident h produced thickening and inflammation in the ar For this reason a new preparation for intramuscu injection, metarseno-argenticum (M.A.A.) has be especially prepared for the writer by Messrs. May a Baker, Ltd. It contains approximately the sa percentage of silver and arsenic, and has been used the same dosage and given at similar intervals to t intravenous product arseno-argenticum. It has be extensively used on mice and rabbits with no appar irritation of the tissues. The first injection given a human being was made by the writer into his o abdominal wall. A solution of 0·05 g. in 2 c.cm. sterile distilled water was used and about 0·5 c.c injected. There was a little pain but no inflammati and after a week there was no trace of the site inoculation. The next injection was given to

ent who had had arseno-argenticum injections for years, and had come to dread them very much on unt of the extreme difficulty of administration. first dose was again a solution of 0·05 g. in cm. of water, and 0·75 c.cm. was given in the eal region. There was no pain or subsequent omfort. The injections were then given at kly intervals in the following way :—

0·05 g. in 2 c.cm. s.d.w.	No reaction.
0·1 g. " "	"
0·2 g. in 3 c.cm. s.d.w.	Some thickening. Severe pain down the leg for a few moments.
0·2 g. " "	No reaction.
0·3 g. in 5 c.cm. s.d.w.	No serious reaction; slight soreness and irritation for three or four days.
0·3 g. " "	Painless and produced no subsequent trouble.

s.d.w. = Sterile distilled water.

he next patient had most difficult veins and was ghted at being spared the previous intravenous tment. The injections were given into the gluteal on, and the record is as follows :—

perimental dose of 0·05 g. in 2 c.cm. water, of which c.cm. was given, produced no general or local ion.

0·05 g. in 2 c.cm. s.d.w.	No reaction.
0·1 g. " "	A little solution leaked out of the syringe into the subcutaneous tissues, and produced, momentarily, considerable pain and smarting, and some slight redness later.
0·1 g. in 3 c.cm. s.d.w.	The greater dilution produced no pain or reaction.
0·2 g. in 5 c.cm. s.d.w.	These all produced slight pain on injection, but no subsequent trouble at all, except for a little thickening for a few days.
0·2 g. " "	
0·3 g. in 8 c.cm. s.d.w.	

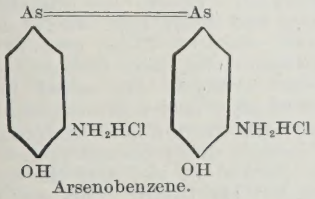
together, therefore, 15 injections have been given i no bad reaction at all.

ne product, therefore, seems to be safe enough for ner use, and the relief to the patient and operator emendous.

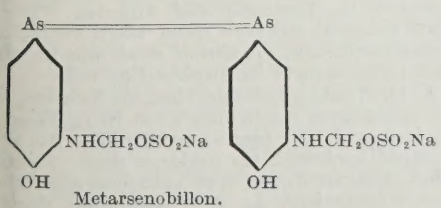
he two products are almost identical in silver and nic content, thus :—

	Silver. Per cent.	Arsenic. Per cent.
eno-argenticum contains	13 to 15	21 to 24
tarseno-argenticum "	14	16 to 17

o satisfactory formulæ can be assigned to these r coördination products of arseno-bases. Metrobillon is a formaldehyde bisulphite derivative senobenzene, the structural relationship of these s being shown by the following formulæ :—



Arsenobenzene.



Metarsenobillon.

tarseno-argenticum is obtainable from the manufacrers, Messrs. May and Baker, Battersea, to whom, and especially to Dr. A. J. Ewins, of their research laboratory, my thanks are due for their coöperation and nterest in what was required.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

Control of Diphtheria in Institutions.

A meeting of the Naval, Military, and Air Force Hygiene Group of this Society was held on May 3rd with Major-General H. P. W. Barrow, the President, in the chair. A discussion took place on the Problem of Diphtheria Control in Crowded Institutions.

Surg. Commander S. F. Dudley said that he had had a good deal of experience of diphtheria from the clinical, administrative, and bacteriological points of view. Although virulent Klebs-Löffler bacilli might give rise to the atoxic variety, it might, for practical purposes, be said that the reverse change never occurred. People who were immune to diphtheria because they possessed natural antitoxin in their blood were distinguished from those who had little or none by the Schick reaction. Sore-throats due to the diphtheria bacillus might be divided into three groups. The first included typical diphtheritic throats with an exudate pathognomonic to the naked eye. The second was a large group with throats or a general condition suggestive of diphtheria. These were especially common in crowded institutions, and if at all ill should be treated immediately with antitoxin without waiting for the swab report. A negative report threw doubt on the diagnosis because the Klebs-Löffler bacillus was easily demonstrated in the majority of primary cultures. Virulent and avirulent strains were found in the same throat more often than had been realised; therefore a report of the presence of the atoxic variety did not invariably rule out diphtheria. In a mixed culture chance determined which variety was tested for toxigenicity. The third group comprised those whose throats contained the bacillus although the clinical condition did not suggest diphtheria. The question then arose: Was the case diphtheria or tonsillitis in a diphtheria carrier? It was commonly believed that avirulent bacilli could not cause sore-throat, but if the bacilli found were virulent the Schick reaction would solve the problem. A Schick negative excluded diphtheria, and Schick positive carriers of virulent Klebs-Löffler bacilli were so rare as to be negligible. In crowded establishments the combination of a sore-throat which was not diphtheria with a positive swab was not at all uncommon. 7 per cent. of some 4000 healthy boys had been proved to be carriers at the Royal Naval School, while 15 per cent. of the swabs from over 1000 non-membranous sore-throats grew the Klebs-Löffler organism. Where the virulence tests and Schick reactions of these boys were known they confirmed the deduction that about half were mild cases of diphtheria in partially immune Schick-positive reactors, the remainder being secondary infections in Schick-negative carriers. The third group rarely required antitoxin, and to swab their throats was only tempting providence. The use of the throat swab in diphtheria diagnosis was therefore limited. To withhold antitoxin until the report came was criminal, as irreparable harm might ensue in the 24 hours. Mistakes occasionally occurred, and Surg. Commander Dudley quoted two instructive cases where the report was negative on undoubted cases of diphtheria. A culture which was negative after 24 hours might show Klebs-Löffler bacilli a day later. This lag was not common in primary cultures, but was quite often seen in swabs from carriers. The bacilli must always be tested for virulence, or avirulent carriers would be unnecessarily detained. The ratio of virulent to avirulent bacilli varied enormously at different times, and after a variable period of contact with its host the virulent bacillus would change into or be replaced by the atoxic variety. The carriers of virulent bacilli with Schick positive reaction were so rare that they

might be neglected, so that virulence tests might be omitted if the reaction was positive.

Danger of the Throat Swab.

The attempt to eradicate by mass swabbing diphtheria which had once got a grip in a crowded institution was hopeless, owing to the intermittence of the carrier state and the fact that the vast majority of symptomless infections only lasted for a short time. Positive and negative findings might alternate for a few days, then a run of six negatives might be followed by a single positive or a run of positives. Surg. Commander Dudley's work thoroughly confirmed that of McCartney and Harvey.[1] A few boys were completely immune to carrier infection, but others became reinfected over and over again during their years at school. At least 75 per cent. of the boys who had passed through Greenwich School during the last seven years must have been infected with diphtheria at some time or other. A series of examinations had proved that boys might be negative one day and positive the next. These investigations had shown that it was not worth while to segregate carriers found experimentally. The carrier was not a pathological curiosity, and in dense populations the diphtheria patient was more a curiosity than the carrier. A simple deduction had shown that during the last three years at Greenwich School there must have been some 20 carriers of virulent bacilli to every clinical case of diphtheria, and about 3000 invisible and undiscovered infections with virulent bacilli. The diphtheria throat swab had been in many ways a curse; it might delay antitoxin treatment, and a positive report without a virulence or Schick test must have forced a wrong diagnosis on many non-specific throats, thus falsifying the notification returns. Two or three negative swabs constituted a very false standard of freedom. The results of every throat swab must be correlated with all other available clinical environmental data. The step of increasing air space in dormitories had been very successful in epidemic meningitis, but three feet between the beds seemed to be no barrier to the spread of diphtheria among British boys. A distance of 9 feet seemed to be necessary and would be quite impracticable under Service conditions. Nor would it be advisable in training establishments, because that was where the raw recruit was seasoned by contact with the organisms of his new environment. To protect the boy under training would only transfer the morbidity to sea-going ships where it would be far harder to treat and control.

Active Immunisation.

Active immunisation was a safe and efficient method of controlling diphtheria, and suffered from none of the disadvantages of other methods. Under natural conditions the whole population slowly acquired immunity; active immunisation merely hastened the natural processes, and had proved itself to be an almost certain method of eradicating symptomatic diphtheria. Active immunisation produced a solid and lasting immunity. Out of 1004 parents circularised from Greenwich School only 7 had refused to allow their boys to be immunised, which proved that there was no great public objection. Disasters which had occurred were almost certainly due to dissociation of toxin in improperly stored mixtures, or to overdosage. These errors and the danger of anaphylaxis could be eliminated by the use of a prophylactic containing neither toxin nor horse serum. A toxoid mixture was just as good if not better than the older toxin-antitoxin mixtures. The reactions after injection were negligible: a local redness and œdema the size of a half-crown. No boys complained of feeling ill, though 3 out of 400 had slight temperatures. With good organisation, a team of two medical officers and three assistants should be able to perform 200 intradermic or immunising injections in an hour. The cost of Schick toxin and prophylactic material for 1000 men with 40 per cent. positive reactors would be about £60, and that sum would be saved within the year if each case of diphtheria were estimated as costing £30. If the entrants at Greenwich School could have been immunised before 1920 about £10,000 would have been saved at a cost of £150. The new entrants were the most susceptible class and accounted for a large proportion of the symptomatic diphtherial infections; they were always segregated for their first three or four weeks. Last term they had had their first prophylactic dose some days before coming in contact with the old boys, among whom were many virulent carriers. The herd immunity to diphtheria started to rise as soon as the first batch of Schick positive reactors had been inoculated. Only two cases occurred during the term although the environment was exceptionally favourable for the dissemination of symptomless infection with both virulent and avirulent bacilli. Klebs-Löffler bacilli were found in over 200 primary cultures from apparently healthy boys. Surg. Commander Dudley felt confident that within six months diphtheria would have practically vanished from the Royal Naval School. He thought that diphtheria incidence could be reduced to a negligible figure and ultimately abolished from an institution by immunising the new comers and segregating them for a few weeks. This would avoid a large initial outlay in time and money, and might indirectly protect the whole population.

Discussion.

Colonel P. R. HENDERSON asked whether an intercurrent tonsillitis might delay the process of active immunisation, so that symptomatic cases appeared. This seemed to have happened at Caterham. Analysis of the barrack square dust had shown that it was 94 per cent. sharp pieces of silica, which might account for the sore-throats.

Major W. R. O'FARRELL did not agree that naked-eye diagnosis was the only investigation necessary; Vincent's angina might simulate diphtheria very closely. The "mild" cases of diphtheria were a distinct entity and required antitoxin; they should not be separated from diphtheria in any classification. He was in favour of the throat swab and had been unfortunate with the Schick test. Many of his cases had been Schick negative, and elderly people were often susceptible by the Schick test although they did not get diphtheria. He would rather trust the throat swab than the Schick reaction, although the latter was useful in eliminating a few cases before the administration of toxin-antitoxin.

Dr. GRAHAM FORBES expressed gratification that increasing numbers of metropolitan boroughs were affording facilities for diphtheria immunisation, and mentioned some of the results. He agreed that a 24-hour culture was insufficient and that a virulence test was essential. Before its introduction many school-children had been kept away unnecessarily. In the epidemic years, 66–70 per cent. of carriers had had virulent bacilli in their throats, but now the percentage was reversed. He asked how long the immunity lasted after active immunisation.

Sir WILFRED BEVERIDGE said that toxin-antitoxin mixture could never safely be sent to hot climates as it had to be packed in ice, and the ice killed the antitoxin and left the toxin. This was the cause of the disasters in Australia and America. The lesson was that tropical workers must learn to make their own toxin-antitoxin. A throat swab was insufficient; the nose must always be swabbed as well.

Dr. J. D. ROLLESTON said that his 30 years' experience of diphtheria confirmed what Surg. Commander Dudley had said. He mentioned diphtheritic whitlow, which rapidly cleared up under a dose of antitoxin. The idea that antitoxin was valueless after the fifth day he stigmatised as a "damnable doctrine"; so long as there was any membrane antitoxin should be given. He was so convinced of the futility of routine swabbing before discharge that he had discontinued the practice. As an example of the caprice of spontaneous immunisation he mentioned the case of his predecessor who, at the age of 3,

[1] See THE LANCET, Feb. 4th, p. 245.

er 42 years as medical officer to a fever hospital, d developed diphtheria with severe paralysis.

The PRESIDENT asked if active immunisation uld be practical for recruits who were only under servation in their depôts for five or six months.

Reply.

Commander DUDLEY, in reply, said that the Schick ction only showed a limit of antitoxin in the blood; was possible for a person to be in a pre-immune dition with no antitoxin in the blood and a nick positive. Injection would then put him in a sition to resist diphtheria in a much shorter time an was realised. The injection he used was simple toid with no antitoxin, and this avoided all asters. He thought that a lot of the epidemiological culiarities of diphtheria were due to changes in the ganism itself. The theory of the immutability of virulent and avirulent strains could not be sup-rted in the light of recent unpublished work.

OPHTHALMOLOGICAL SOCIETY.

ANNUAL CONGRESS.

(*Concluded from p. 860.*)

Mr. E. WOLFF read a paper (by himself and Mr. F. VIES) on

Fragmentation of the Retinal Blood Stream.

e said this phenomenon was generally regarded a post-mortem one, and had been suggested as a eans of proving the difference between death and ch simulating conditions as cataleptic trance or parent death from drowning. But his colleague and , in some experimental work on the production of inal œdema, found a method of producing and olisbing fragmentation at will in the living animal. e condition was first described by Bouchut in 1869, d Mr. Usher had shown that just before death the od in the vessels took on a finely granular pearance, then became coarsely granular, and then mented, or beaded. Bulmer compared this picture h that of a chain of anthrax bacilli. Usher noted t at times spontaneous respiration might be con-ued after the onset of this granular appearance. hn, in 1916, said he regarded segmentation of the inal blood stream as an absolute sign of death. at this was not so was proved by the following periment. Working on cats, Mr. Wolff and Mr. vies tied the innominate and subclavian arteries, ich are the only branches of the aortic arch in s animal and also the superior vena cava. Frag-ntation became clearly evident; when the ligatures these vessels were released the phenomena dis-peared and could be reproduced at will. According Mr. Wolff and his collaborator the segmentation the blood stream was influenced by the following tors: the slowing of the blood stream; the size of the sel; the type of the corpuscle; the type of serum; type of lining endothelium; and possibly the ssure on the vessel—i.e., the intra-ocular tension. e sequence of events was as follows: the arteries ame fine threads almost at once; the granular pearance of the blood and visible streaming in veins were noted in 10 seconds; fragmentation s noted in 35 seconds. The authors of the per agreed with Gayet that the segmentation n and all other ophthalmoscopic signs of death had their importance in proportion to the amount of eful study which had been given to them.

The paper was discussed by Mr. A. W. ORMOND, . GRAY CLEGG, and the PRESIDENT.

The afternoon of April 19th was given up to the mination and discussion of a large number of nical cases at Moorfields. In the evening a discus-n took place on the

Causes and Treatment of Iridocyclitis with Raised Tension.

Mr. R. AFFLECK GREEVES, in opening, said he umed that the discussion was mainly concerned h raised intra-ocular tension in the active stages of iridocyclitis. The causes and treatment of this condition, as distinct from the secondary glaucoma which arose from the inflammatory process, had received but scant attention not only in text-books but in the literature. In many varieties of glaucoma there was a rise of tension due to a blocking of the excretory angle; but glaucoma could exist in association with a normal or increased depth of the anterior chamber, and in the absence of any apposition or adhesion of the iris root to the corneal periphery. In 1913 he suggested that the cause of the deepening of the anterior chamber in iridocyclitis, which might occur independently of a rise of tension, depended upon osmosis; the colloids in the anterior chamber would take up water, the vitreous body would lose it, and so the lens and iris would move back. There was now considerable evidence that the intra-ocular fluid was a transudate from the capillaries of the ciliary body, and Mr. Duke-Elder's work supported this idea. Intra-ocular pressure could be varied by changing the relative compositions of the blood and aqueous, a condition which must occur in inflammations of the ciliary body because of the increased permeability of the capillary walls. Such conditions might be factors in the causation of glaucoma in cases of serous iridocyclitis. The latter two conditions occurred most frequently in middle aged and elderly people whose anterior chamber was usually shallow. This was apparently a different type of case from that of iridocyclitis with raised tension in which the anterior chamber was either normal or increased in depth, as in them the onset of the inflammatory process was sufficient to induce the condition. This kind of case was made worse by the use of mydriatics, while miotics often caused a fall of tension. Yet it was not the case that mydriatics were always successful in people who had a deep or a normal anterior chamber. In more than one case he had noted that atropine at first raised the tension, while eserine reduced it, but after treating with a miotic for some days, so lowering the tension, atropine could be used with impunity.

In these cases there was much difference of opinion on the question of mydriatics versus miotics. The general line of treatment which Mr. Greeves usually adopted was to use a miotic when the particular anterior chamber was shallow and the appearance of the eye suggested a predisposition to glaucoma. For a deep or normal anterior chamber he instilled homatropine, and, if this proved beneficial, he continued with atropine. If, however, the tension remained raised or was increased he resorted to miotics. If definite improvement followed this and tension was normal for some days he again used a mydriatic.

Mr. W. H. MCMULLEN commented on the great variety in the histories and clinical pictures presented by cases in which iridocyclitis had been accompanied by increased tension. Many tended to conform to one of three types: (1) Those in which increased tension occurred soon after inflammation set in; (2) those cases of glaucoma in which uveal inflammation could be found; (3) cases of chronic iridocyclitis in which increase of tension occurred months, perhaps years, after the onset of obvious inflammation. With regard to the treatment of class (1) there were two distinct schools. One stressed the danger of provoking high tension by using mydriatics, advised great caution in their use, and urged the use of a miotic instead on the slightest increase of tension. The other school insisted on the great value of mydriatics, and thought they should be used boldly and freely. They said the surgeon should be prepared to operate should a considerable rise of tension occur. Mr. McMullen accepted the teaching of this second school. In this type the great cause of the high tension was the iridocyclitis, and the most effective means of relieving the inflammation should therefore be adopted, especially as rest was so important. Dilatation of the pupil was also desirable, so as to prevent the formation of synechiæ. Sometimes rest in bed, purging, diaphoresis, leeching, the local application of heat, and the continued use of atropine caused a fairly acute rise of tension to subside within 24 hours, without operation.

He described the operative measures when these were needed. In type (2) the history might be exactly similar to that of primary glaucoma, and very careful examination with the slit-lamp might be necessary to detect the few spots of keratitis punctata or other evidence of inflammation of the uvea. The treatment of this class of case presented a difficult problem, as more was required to be known about the ætiology and pathology. His experience was that these cases did not do well on atropine, or on atropine and paracentesis. Sometimes miotics quickly relieved tension, but it quickly rose again. In most cases operation was required to bring about a permanent reduction of tension, either iridectomy alone or combined with fistulisation. In acute or subacute glaucoma with very slight signs of uveal inflammation medical treatment should not be continued long. The operation he preferred was Lagrange's. In type (3) there might be an insidious increase of tension, which could easily be overlooked until it had caused cupping of the disc and defective fields of vision. Medical treatment sometimes reduced the tension here, but recurrence was likely, and operation was needed permanently to relieve the tension. No method but operation was likely to be effective when the glaucoma was chronic, with cupping of the disc. The choice of the operation must be related to the condition of the eye, the aim being to produce a filtering scar.

Sir ARNOLD LAWSON said he did not remember having had a case in which he derived satisfaction from the use of a miotic. He felt that the use of atropine could not be wrong, and the reason it did not always act in the way it was hoped was that the inflammation had not been, at the time, successfully controlled. Often the causal factor was obvious, for the patient's Wassermann was strongly positive, or oral sepsis might be present, though it was a danger to seek to attribute to mild oral sepsis because such was found, any disease which might be present in the body. Vaccines in these cases he had found to be very disappointing. Paracentesis should not be persisted in if it had failed two or three times. He favoured anterior sclerectomy with a small iridectomy.

Mr. J. GRAY CLEGG said that in 27 years he had found that in his hospital 146 cases of iridocyclitis were severe enough to warrant in-patient treatment, and 55 of them presented definite raised tension which was not due to occlusion of the pupil. In the 55 cases the underlying causes were: syphilis in 6, tubercle in 2, a septic focus in 12. In 35 the cause was not found. It was his practice always to try medical methods first, and only when these failed to restore normal tension to the globe did he operate. He described his medical procedures. Non-operative measures were successful in 23 of the 55 cases, but the abnormal tension was liable to return. The operation he now carried out was paracentesis—which might have to be repeated several times—as iridectomy seemed to aggravate the inflammation. The ideal was to produce a permanent drainage from the anterior chamber.

Mr. T. HARRISON BUTLER thought that no case which had a florid iridocyclitis and approximated to sympathetic trouble should be operated upon if it could at all be avoided. Observing pigment on the posterior surface of the cornea was not necessarily an indication of an inflammatory process; it might show senile degeneration. In the florid acute cases the use of eserine was apt to be disastrous. Most of the cases occurred in women, and it was always wise to have their genital region investigated and put right by an expert.

Mr. A. L. WHITEHEAD said he had found, in a large number of these cases in women, some definite diseased condition—usually septic—in the vagina or uterus. But in others no cause could be found. Tuberculous iridocyclitis had been very rare in his experience. Sepsis and syphilis were much more frequent accompaniments. In the treatment of the eye itself he attached the greatest importance to the application of heat, both moist and dry, which could be carried out best by means of the electric pad. Hot irrigations of saline or boric acid for several minutes at a time and repeated was very valuable, as also was the applicati of leeches. Operation in these cases was frequent disastrous. Occasionally paracentesis had a ve good effect.

Colonel H. HERBERT spoke of the value of atropi in reducing tension in cases which were definitely d to iridocyclitis. Sclerectomy was too severe.

Other speakers followed, and the openers replied

On Friday morning the Congress discussed the

DIAGNOSIS AND TREATMENT OF INFLAMMATORY AFFECTIONS OF THE ORBIT.

Mr. NORMAN PATTERSON, in opening, said, as rhinologist, that inflammatory conditions affecti the orbit were in most instances secondary to infection of the nasal sinuses, and children were t chief subjects. Birch-Hirschfeld found that out 684 cases of orbital inflammation 409 were due to inflamed condition of the accessory sinus, and stat that the proportion would probably have been high if the nose and sinuses had been examined in eve case. The speaker's own conclusion was that disea of the antrum and sphenoidal sinuses was rare responsible for orbital conditions. In nasal obstructi the nasal drainage might be so checked that infecti passed into the orbit. Mr. Patterson detailed t nasal conditions usually found and the methods diagnosis. Orbital inflammation, he said, might occ very suddenly soon after the onset of a nasal catarr and at a later stage pain was increased by ocular mov ments. In all cases of orbital inflammation trar illumination should be carried out, and a thorou X ray study of the sinuses made. Thrombosis of t cavernous sinus might be secondary to orbit cellulitis, or it might arise by direct spread of infecti from one of the nasal sinuses, generally the sphenoi He considered treatment at some length, dividing into three heads: general, the treatment of the nas condition, and dealing with the orbital complicatio

Mr. A. F. MACCALLAN followed with an equal elaborate contribution from the ophthalmic side. I suggested the following classification: (1) injurie (2) primary osteomyelitis; (3) acute dacryo-adeniti (4) spread of inflammation from neighbouring par as in panophthalmitis, cavernous sinus thrombos infected wounds or abscesses of face, acute pharyngit periodontitis, infections of accessory sinuses, tub culous meningitis; (5) septicæmic condition (6) syphilis and tubercle; (7) orbital myiasis, asp gillosis, and actinomycosis. These he dealt with succession, and reported a number of illustrati cases.

Dr. P. WATSON-WILLIAMS, Mr. SOMERVIL HASTINGS, Mr. E. D. DAVIS, Mr. HARRISON BUTLE Sir WILLIAM LISTER, Dr. G. MACKAY, Mr. A. WHITEHEAD, and Mr. JAMESON EVANS took part in t discussion.

Among other papers read was one by Mr. CHARL GOULDEN on the

Illumination of the Field of Operation in Ophthalmic Surgery.

He said that for the attainment of the best resul two important conditions must be satisfied: (1) a sh focusing of the image of a homogeneous source light upon the part of the eye to be examine (2) the light must be so directed that all reflex fr any reflecting surface of the eye was avoided. T first condition was secured by the Lister operati lamp and the Hess Hamner lamp, but the avoidi of a reflex from the reflecting surface of the e during operations had not received sufficient consider tion; yet the illumination of the eye was too importa to be left to a nurse or other inexperienced pers The paper was devoted to the question of avoiding confusing corneal reflex and the brilliant glint of t knife or needle being used. For daylight operatir even in ophthalmic operating theatres, the bed w often put into a position which was not the be The operating table should be parallel with t window, with the eye in question towards the windo But even then lamps were essential for good illumin tion. The beam from the lamp should be direct

ver the forearm of the hand which was fixing the
ye, and should make with the patient's visual axis
s great an angle as possible without obstruction by
ıe brow and nose. Mr. Goulden gave the posi-
ons best adapted to various operations.

The Bowman lecture was delivered by Prof.
. ELLIOT SMITH, who dealt with

The New Vision.

Ie spoke of the importance to man of the transference
f function that had taken place in the brain during
volutionary processes. A new cortical area, known
s the neopallium, had been developed when the
ıammal had evolved from the primitive reptile,
ıd had gradually assumed functions formerly carried
ı by the mid-brain and other lower centres. Later,
ıe development of the macula lutea in monkeys
ıd man had provided a new type of vision, which
ıabled man to see the world and appreciate its mean-
ıg as no other living creature was able to do. This
ıller vision was dependent on structural changes. Prof.
lliot Smith traced the steps whereby in mammals the
ınctions of motor control, formerly exercised by the
uadrigeminal bodies, became vested in the cerebral
ɔrtex. This process was said to be incomplete in
ıe rabbit, the control of the hind-limbs being still
ɛtained by the mid-brain, whereas the cortex con-
ɔlled the movements of head, fore-limbs, and body.
earrangement of the fibres of the optic tract in the
igher mammals, associated with binocular vision,
rought about a further diminution in the power of
ɔntrol of the quadrigeminal bodies, and when the
ıacula lutea developed, the fibres from the percipient
ells in this area, which accounted for more than a
ıird of the optic nerve, increased greatly the pro-
ɔrtion of fibres going to the lateral geniculate body.
his body, losing much of its autonomy, became
ıore and more an intermediary between the retina
nd the neopallium. Thus, in man, almost the whole
ınction of visual perception became concentrated
ı the cerebral cortex, and he is thus enabled clearly
ɔ see, to understand, and to interpret what is
appening around him.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A MEETING of this Section was held on April 20th,
ɔr. GIBBON FITZGIBBON, the President, in the chair.

Obstetric Practice at the Rotunda Hospital.

Dr. BETHEL SOLOMONS, Master of the Rotunda
Iospital, read the clinical report of the hospital for
he year 1926–27. He said that during the year
adiographic plant had been installed and had proved
seful both for obstetrical diagnosis and for gynæ-
ological diagnosis and treatment; he explained how
elvimetry was done with X rays. The pathological
ıboratory had been reopened; the scope of the
ntenatal department had been greatly increased, and
small ward had been opened for the treatment of
ıfants. The number of Cæsarean sections was still
ırge in spite of every effort to avoid them, the
ɔwer segment being the chosen route. The treatment
f eclampsia had scarcely altered; morphine was used,
nd glucose was given by the mouth or rectum or
ıtravenously. Pituitrin, 0·5 c.cm., was injected
ıuring colon lavage, when the result was most satis-
actory. Fifty-three cases of antepartum hæmorrhage
ıad been treated without a death. Among the 3717
ɔatients admitted to hospital during the year there
ıad been 12 deaths (0·32 per cent.).

The PRESIDENT said that the treatment of septic
ases at the hospital was apparently much what it
ıad been at the end of his term as master. In the
ıst few years treatment by vaccines and antitoxins
ıad been largely dropped, but blood transfusion was a
ɔaluable measure. Cæsarean section via the lower
egment was more difficult than the classical operation, but its results were better. He did not think, however, that it would have a much greater influence on the recovery of a case which had been actually infected. In these circumstances drainage should always be done at the time of operation. He was convinced that in no case of accidental hæmorrhage was plugging of the cervix indicated; he had seen disastrous results from this practice.

Sir WILLIAM SMYLY referred to improvement in the service of the hospital during the year of Dr.Solomons's mastership, and advocated use of the term "eclamp-sism" recommended by Dr. Bar for cases in which there were no convulsions, instead of "pre-eclamptic"; whilst "eclamptic" should be reserved for cases with convulsions. It was remarkable that there had been three cases of unruptured tubal pregnancy within the 12 months.

Dr. LOUIS CASSIDY thought that vaginal plugging should only be done if the cervix was completely closed and should not be used except in an emergency. At the Coombe Hospital it had been found that at least half of the women who developed sepsis had not been interfered with. He believed that there were three causes for sepsis—namely, external contamination, a septic focus in the body (e.g., in the teeth), and residual urine in the bladder. He felt that Cæsarean section was too largely employed at present. So long as there was no toxæmia or albuminuria the chances of delivery by the normal channels were generally good.

Dr. G. J. W. TIERNEY thought that the statement by Dr. Solomons in the report, that he would never perforate a living child, would add considerably to the prestige of the hospital. He noticed that in cases of induction of labour, oil, quinine, and pituitrin were given, but the last-named was never used if there was any disproportion. It seemed to him that if pituitrin was omitted because it brought about uterine contractions, then quinine and possibly also oil should be omitted; but he felt that where the disproportion was only slight all three might safely be used.

Dr. D. J. CANNON referred to the necessity of treating shock before hastening labour by rupture of the membranes.

Dr. A. H. DAVIDSON, speaking of the use of pituitrin in eclampsia in order to get the bowels to move, said that he thought this might be rather dangerous, as pituitrin raised the blood pressure, and might cause hæmorrhage into the brain or some other vital part. As a means of producing spinal anæsthesia he had found that 1·0 c.cm. of stovaine produced absolutely perfect anæsthesia for 1 hour and 40 minutes; and that there was no necessity to give 2·0 c.cm.

Dr. J. S. QUIN believed that the only treatment really of value in septic cases was blood transfusion.

Prof. R. J. ROWLETTE was glad to notice that in septic cases Dr. Solomons had returned to some extent to the use of vaccines, and hoped that this would reduce the mortality.

Dr. N. MCI. FALKINER suggested that a detailed report of the cases that attended the antenatal department and were delivered in the Rotunda Hospital should be kept, and compared with those cases which did not attend the department.

SECTION OF ANATOMY AND PHYSIOLOGY.

A MEETING of this Section was held on March 23rd, Prof. J. O'C. O'CONNOR, the President, in the chair.

Dr. W. R. AYKROYD read a paper on

Vitamin-A Deficiency in Newfoundland.

He said that Newfoundlanders as a people lived on a diet deficient in fat-soluble and other vitamins. Functional hemeralopia, not directly associated with beri-beri or scurvy, occurred amongst them and was rapidly cured by foods rich in vitamin A. A similar condition due to failure in synthesis of rhodopsin occurred in rats starved of vitamin A. Deficiency of vitamin A had not been definitely associated with any other condition in Newfoundland.

The PRESIDENT, commenting on the fact that a people who supply the greater part of the world with

vitamin A should suffer from lack of it themselves, said that in Denmark during the war there was for the first time a complete disappearance of deficiency diseases owing to the fact that the Danes were then unable to export all their butter. He asked whether in Newfoundland the workers who prepared the oil were subject to night-blindness.

Dr. R. E. STEEN inquired whether shortage of vitamin A had any share in the causation of rickets, and after other contributions to the discussion Dr. AYKROYD, in reply, said that the fishermen who actually handled the oil did so in a weak light, and therefore do not suffer from functional hermeralopia. In his opinion vitamin A had no share in the causation of rickets and in his series of cases the ocular symptoms appeared by themselves, and were unaccompanied by rickets.

Prof. A. F. DIXON showed three specimens of double monsters, with varying degrees of duplicity.

THE ROYAL SOCIETY.

PHYSIOLOGY OF THE CEREBRAL HEMISPHERES.

ON May 10th Prof. IVAN PAVLOV, a Foreign Member of the Society, delivered the Croonian Lecture on Certain Problems in the Physiology of the Cerebral Hemispheres. The following is an abstract of his address :—

The function of the nervous system is to maintain dynamic equilibrium within the organism and between the organism and its environment. In the latter case the equilibrium is, in the higher animals, extremely complex and is achieved mainly by means of the hemispheres. These continuously analyse and synthesise events occurring in the environment, and in correspondence with its changes establish temporary connexions between events, whether simple or complex, and various activities of the organism, in particular those of the skeleto-muscular system which is preponderantly concerned in reacting to environmental changes and is likewise itself highly differential and integrative in its response.

At present the physiology of the hemispheres exists only in outline—as a framework consisting of only a limited number of known factors, such as excitation and inhibition, their two-directional movement in the form of irradiation and concentration, and their mutual induction. The working out of the innumerable details of their intimate mechanism is a colossal problem of the future. Some observations comprising investigations carried out by Prof. Pavlov and his co-workers, subsequent to the publication of his book on "Conditioned Reflexes," are summarised.

Mechanism of Conditioned Reflexes.

The development of new temporary connexions between external agencies and definite reactions of the organism (development of conditioned reflexes) depends on the coincidence in time of the action of these agencies upon the receptor mechanisms of the organism with the various activities of the organism evoked either by external stimuli effective since birth, or by external stimuli which have become established as such after birth, or finally by changes in the internal condition of the organism (automatic stimuli). Under these conditions the formation of the connexion is a physiological law.

In order to become a firmly established, powerful, conditioned stimulus the external stimulus must begin to act slightly before the particular activity of the organism, and may even cease a few seconds before the beginning of the activity. If, on the other hand, the given activity constantly begins before the stimulus, either no connexion is established or if any is established it is weak, and survives only for a short time, and the specialised excitatory effect of the stimulus is invariably replaced by general inhibition. The biological significance of this fact is not yet clear. Where the stimulus begins to act before the given activity of the organism and continues during that activity the reflex tends to increase in strength and stability. The mechanism underlying these phenomena cannot be expressed in terms of the general properties of the cortical tissue without further investigation.

Analysis of Stimuli.

The analysing activity of the nervous system is founded in the first instance on the peripheral receptor organs, which constitute not only a receptive mechanism but also an analysing apparatus of the organism. To the peripheral points of the analyser separate points correspond in the cortex (the primary and simplest cortical mosaic). A good proof of this is that by applying definite external stimuli belonging to the same analyser—e.g., different auditory stimuli—it is possible to produce various disturbances or fatigue at different strictly localised cortical points. In this manner a very delicate method is opened up for investigating the construction of the cortical parts of the analysers, and it is possible to distinguish special areas in the cortex corresponding to the different analysers (visual, auditory, &c.) from certain other cortical elements of those analysers, which are dispersed probably over the whole mass of the cortex of the hemispheres. Not only are these dispersed elements incapable of performing any higher synthesis and analysis, but they have a very low degree of vitality, as evidenced by the rapidity of their transition into an inhibitory state under the influence of external stimuli.

Excitation and Inhibition.

The conditions determining the characteristics and the magnitude of the excitatory and the inhibitory effects of conditioned stimuli are bewilderingly complex and are only gradually being registered and classified. It is obvious that the magnitude of the positive effect is directly related to the amount of energy applied to the receptor organ. The phenomenon of summation of weak stimuli comes out clearly. The limit of normal excitability and the optimal strength of stimulation are also definite. In the case of very strong stimuli and of the summation of medium stimuli the excitatory process rapidly changes into an inhibitory one. Of course, the strength of stimulus is a relative quantity, varying greatly with individual differences of nervous system.

Since most probably the points between which the new connexions are established are in the cortex, it follows that the variations in the effect of conditioned stimuli will be dependent on the mutual relation between the different cortical points corresponding to the different conditioned stimuli, and also between the different points of those areas of the hemisphere which are affected by the unconditioned stimulus. For instance, the conditioned stimuli, based on food and acid respectively, both become connected with the chemical analyser of the hemispheres and therefore if in the experiments both sets of conditioned stimuli are used, their effect will be determined not only by the inter-relation of the points corresponding to the stimuli, but also by the relation existing between the alimentary and "acid" points of the chemical analyser.

Psychological Types.

The accumulation of observations upon the normal and pathological activities of the hemispheres gives grounds for distinguishing various types of nervous system. There is the excitable type, which always displays partial or complete failure when confronted by difficult relations between the excitatory and inhibitory processes, and which, if the experiments are continued, ends by developing an abnormal and extremely protracted weakening of the inhibitory activity, attended by an exaggerated general excitation. At the other extreme stands the inhibitable type which very easily becomes subjected to inhibition by stimuli either unusual or slightly stronger than usual, and which when confronted by comparatively difficult relations between the excitatory and inhibitory processes passes into a state of complete inhibition for prolonged periods of time. In between can be placed the well-balanced type which, successfully and without any signs of abnormality, establishes in a

ases a balance between the opposed nervous processes. This type comprises two varieties of animal, differing greatly from one another in external appearance—he stolid animal, always quiet, and the animal which s lively under ordinary conditions, but becomes drowsy with surprising rapidity under monotonous conditions. The latter variety has some difficulty in obtaining a balance between the two processes. This grouping of the types of nervous system corresponds closely to the ancient classification of temperaments; he excitable type—choleric temperament; the inhibitble type—melancholic; the quiet, balanced type—phlegmatic; the lively balanced type—sanguine.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

A MEETING of the Scottish branch of this Society vas held at Glasgow on May 2nd, when Dr. R. L. KAHN gave a lecture on the

Clinical Aspects of the Kahn Reaction.

He began by reviewing the history of the serum diagnosis of syphilis, touching upon the discovery of *Spirochæta pallida* by Schaudinn and Hofmann; the evelopment of our knowledge of complement-fixation y Bordet and Gengou, and the evolution of the Vassermann test by Wassermann, Neisser, and Bruck. After discussing the early attempts—beginning with Michaelis in 1907—to develop a precipitation test for yphilis, and describing the work of Sachs and Georgi, Meinicke, and Dreyer and Ward, he went on to give n account of his own earlier studies of precipitation. He had shown the requirements for optimal precipitaion results, when syphilitic serum was mixed with an ntigen-saline suspension, to be as follows: (1) optimal oncentration of antigenic lipoids in the antigen, xcessive or deficient concentration preventing preipitation. (2) Proper physical state of antigen uspension. (3) Correct quantitative relation between erum and antigen suspension; the number of antigen nits must not exceed the number of serum units. 4) Shaking, as a probable means of hastening collision etween the interacting particles. (5) Dilution of the ixture of serum and antigen suspension should be inimal. These observations formed the basis of he Kahn test. The outstanding features of the est were: (1) relative simplicity in performance; 2) rapidity in obtaining results, the test requiring o incubation and being completed after shaking the agents (serum and antigen suspension) for three inutes; (3) relative economy; (4) availability in l parts of the world; (5) application to research in xtending our knowledge of serum diagnosis of syphilis. s to the relation between the Kahn and Wassermann ests, Dr. Kahn claimed that the interaction between erum and antigen was the same in both tests. The sult of this interaction was directly visible in the ahn test by the formation of a precipitate, while in he Wassermann test, the result being invisible, a ecial indicator (the hæmolytic system) was employed o render the reaction visible.

The test was highly specific for syphilis and was naffected by pathological conditions other than yphilis. Dr. Kahn insisted, however, that it should e used only as an aid in the diagnosis and treatment of yphilis and should not supplant careful clinical study f each and every case. He concluded his lecture by iscussing the additional procedures of the Kahn action, including the quantitative serum procedure, he qualitative and quantitative spinal fluid procedures, nd the more sensitive "presumptive" procedure.

WEST SURREY HOSPITAL LEAGUE.—This organisaon, which has just come into existence, seeks to establish mass contributory scheme which in return for a contribution 3*d.* or 4*d.* per week will entitle the contributor and his mily to treatment at the Royal Surrey County Hospital the local cottage hospitals. The Cranleigh Village Hospital nd the Farnham Cottage Hospital have already joined the heme.

Reviews and Notices of Books.

BEDSIDE DIAGNOSIS.

By American Authors. Edited by GEORGE BLUMER, M.D., David P. Smith Clinical Professor of Medicine, Yale University School of Medicine, Attending Physician to the New Haven Hospital. London and Philadelphia: W. B. Saunders Company. 1928. In three volumes totalling 2820 pages, with 890 illustrations and separate index volume to the entire work. Per set, £6 15*s.*

THE title of this work is designed to call attention to the fact that it is an attempt to emphasise the importance of diagnosis without extensive laboratory equipment. Many patients still have to be treated in their own homes, where facilities for diagnosis are limited to clinical examination with only such aids to the senses as the stethoscope and the thermometer. The authors hold that more accurate aids will never replace the older and simpler methods, while not minimising the importance of any kind of diagnostic test when it is available. Deliberately, then, they have omitted details of laboratory procedures while indicating their value, especially when combined with clinical observation.

The first volume of the book contains sections on infectious diseases, the intoxications (which are subdivided into those due to chemical poisons, those due to food poisons, and those due to acidosis and alkalosis), deficiency diseases, allergic diseases, diseases due to physical agencies such as compressed air illness and electric shock, metabolic diseases, developmental diseases, diseases of the locomotor system, and diseases of the digestive system. Diabetes mellitus is included in the section on metabolism because, although technically it should be placed with the endocrine disorders, actually its management is usually in the hands of those specially interested in the former group. The second volume contains sections on diseases of the liver, gall-bladder and bile-ducts, the pancreas, the peritoneum, the bronchi and lungs, the mediastinum, the circulatory organs, the blood-vessels, the blood-forming organs, lymph glands and spleen, and the urinary system. The third volume deals with diseases of the endocrine system and of the nervous system; here are included chapters on the muscular dystrophies and myasthenia gravis, on mental disorders and feeblemindedness. In relation to each disease the history is first described; physical signs are then set out in detail and their importance weighed; a summary is then given of the more complicated methods of diagnosis, with an assessment of their relative values, and finally the differential diagnosis is discussed. The subject is then completed by a short bibliography. Occasionally clear descriptions of actual cases are included. These are well chosen and not too numerous. An extremely high standard is maintained throughout, and the authors seem to have a happy knack of setting out just those points which are likely to be of use in difficult cases. The section on diseases of the circulatory system contains a preliminary chapter by Dr. W. J. Kerr on instrumental aids in diagnosis. In this he discusses the value of X rays, the sphygmograph, the polygraph, and the electrocardiograph, pointing out that if a constant endeavour is made to discover the clinical manifestations associated with changes recorded by instrumental means, it is usually possible to dispense eventually with such aids for routine work. The diagnosis of congenital cardiac disease is dealt with very fully in a section of 150 pages containing many clear diagrams. Of the other chapters in this section those on angina pectoris and disorders of the heart-beat should prove especially helpful.

In the section on diseases of the kidney clinical methods are again emphasised. The laboratory tests which are regarded as of most value in estimating renal function are the phenolphthalein test, the two-hour renal test, and the blood-urea nitrogen. Diseases of

the endocrine system are described by Dr. Hans Lisser, who holds that the great majority of these are due primarily to disease of one gland, although other glands are subsequently disturbed. He considers that the doctrine of pluriglandular disease has led to much confusion in diagnosis besides leading to the practice of unscientific pluriglandular therapy. Subsequent chapters stress the uniglandular prominence of endocrinopathies, and give as clear and simple a picture as possible of the disorders associated with each. Their value to the diagnostician is greatly increased by excellent photographs and descriptions of actual cases. The section on disease of the central nervous system is preceded by a description of its anatomy and physiology. A special feature here is the diagrammatic representation of sections from different parts of the cortex of the brain showing the type and arrangement of cells in each; diagrams showing the distribution of cutaneous nerves are also included. The book is well bound, the print is excellent, and the illustrations carefully chosen and well reproduced. Not only is each volume indexed, but a separately bound index to the whole three volumes is provided, so that fruitless searching in the wrong volume can be avoided.

The physician will find it hard to get a finer book.

PATHOLOGY OF THE NERVOUS SYSTEM.

Nouveau Traité de Médecine. Publié dous la direction de MM. G. H. ROGER, F. WIDAL, et P. S. TEISSIER. Fasc. XXI. Pathologie du Système Nerveux: nerfs, sympathique, névroses. By Various Writers. Paris: Masson et Cie. With 415 illustrations. 1928. Pp. 900. Fr.85.

THIS fine addition to the volumes of the encyclopædic "Nouveau Traité de Médecine" contains long articles on neuralgia and on the lesions of peripheral and radicular nerves from the authoritative pen of Dr. J. Tinel. His study of traumatic nerve lesions, as was to be expected, is particularly well documented and illustrated, and includes a critical survey of the problems of causalgia. His conclusion is that this peculiar variety of neuralgia is always of reflex sympathetic origin, and that it can be treated successfully in more than one way. Periarterial sympathectomy is possibly less constantly helpful than alcoholisation of the injured nerve proximal to the lesion, the disadvantage of which, however, is the ensuing motor paralysis. A rather short, if concise, contribution is that by M. Chiray and M. Pavel on neuro-vegetative syndromes; interesting though it is, it serves at the same time to indicate how wide are the gaps in our knowledge of the sympathetic nervous system and how unsystematised still is our diagnostic insight into its affections. Comment of this kind is applicable also, possibly in minor degree, to problems of vasomotor and trophic disorder. The article by M. Parisot and M. Cornil makes very interesting reading, for acroparæsthesia, Raynaud's disease, intermittent claudication, acrocyanosis, are not exactly rare, and what is known of them is well summarised—yet there is a sad lack of precision about it all. Dejerine's intermittent claudication of the spinal cord is duly considered, but it is surely little else than a hypothetical explanation of symptoms capable of other pathogeneses. Acroparæsthesia can legitimately, we think, be made into a clinical entity, but its pathological basis stands in much need of substantiation. The sections on trophic disturbances (M. Heuyer, Prof. Marinesco) cover a rather surprising amount of clinical ground from melanodermia and sclerodermia to perforating ulcer and recurrent hydrarthrosis. Prof. Christiansen deals with the migraines; we wish he had said more of their pathogenesis—that is, of the method of production of migrainous syndromes; and more, too, of ophthalmoplegic migraine and its obscurities. Perhaps the longest and most controversial section in the volume is entitled "Neuroses-Dyskinesias," by M. Klippel and M. Weil. Embraced under this heading we find epilepsy, hysteria, neurasthenia, traumatic neurosis, the choreas, myoclonias, tics, tetany, and so forth. These articles reflect, as is perhaps natural, the viewpoints mainly of current French neurology, though we admit the catholicity of the bibliographical references; strong on the clinical and (where known) pathological side, they are undoubtedly weakest in discussion of the pathophysiology of the actual clinical symptom.

Nine hundred large pages, closely printed, devoted to but a restricted portion of the whole realm of neurology—here is a thesaurus for the neurologist to turn to for enrichment of his knowledge on both theoretical and practical sides.

HEALTH AND EXERCISE FOR GIRLS.

By ANNE M. ROBERTSON, B.A. (Hons. Lond.). with Illustrated Supplement of Practical Exercises designed by F. A. HORNIBROOK, and a Foreword by Sir BRUCE BRUCE-PORTER, K.B.E., C.M.G., M.D. London: William Heinemann, Ltd. 1928. Pp. 62. 5*s*.

IN his preface to this little book Sir Bruce Bruce-Porter writes that "those who are healthy will think in terms of health." We doubt it. Health is like social position; no one thinks of it unless there is something wrong with it. Mrs. Robertson deals with preventive medicine and physical culture from the point of view of a cultured lay woman. She puts forward the laws of health in a simple readable way; she shows that a human body needs as much care as a house to keep it in perfect order; cleanliness comes first, then diet. "Of all people that we know," she writes, "the citizens of Attica did the highest thinking on the lowest feeding. . . . The Greeks lived chiefly on porridge, wholemeal bread and water, taking only one or two meals daily." But this diet would hardly, we think, be popular among present-day school girls or their parents. In other directions the author gives much good advice, though it is easy to see that she is swayed by the idea that intestinal stasis is the root of all evil. Mrs. Hornbrook's supplement on practical exercises for growing girls suggests that games may be overdone and physically harmful, whereas systematic exercise can do much to promote beauty of form and perfect health. The book should be of help to parents and school-teachers.

BOLLES LEE'S MICROTOMIST'S VADE-MECUM.

A Handbook of the Methods of Microscopical Anatomy. Ninth edition. Edited by J. BRONTË GATENBY, M.A., Ph.D. Dub., B.Sc., D.Phil. Oxf., D.Sc. Lond., Professor of Zoology and Comparative Anatomy, Dublin University; and E. V. COWDRY, M.A., Ph.D., Rockefeller Institute for Medical Research, New York City. London: J. and A. Churchill. 1928. Pp. 710. 30*s*.

THE last edition of this invaluable work appeared in 1921, and histologists will welcome its successor. The book is essential to the microscopist, be he biologist, botanist, or pathologist. Little of the old matter has been dropped, and much new information has been added. The section on the histologic applications of measurements of acidity and alkalinity is as good as anything dealing with this highly complex business can be made; that on the culture of tissue in vitro is admirably clear in itself, and the references which it contains are sufficient to enable even the beginner in laboratory technique to embark upon this delicate branch of biological study. The section on micro-manipulative technique might with advantage have been made fuller or omitted. This is a subject almost impossible to set out in a handbook.

The value of this type of book depends largely on the skill with which its index has been compiled. Here the burden of effort seems to have been shifted entirely from the shoulders of the reader to those of the authors, and there need be no delay or disappointment in finding immediately information on any point within the wide scope of the book.

THE LANCET.

LONDON: SATURDAY, MAY 12, 1928.

RADIUM FOR CANCER.

ON the last day of 1927 we commented in these columns on the probable future of the treatment of cancer with radium and predicted relatively rapid developments. The first five months of 1928 have amply justified our confidence, and to this our recent issues have testified. In March Mr. HAYWARD PINCH, Director of the Radium Institute, in the course of a discussion at the Royal Society of Medicine, predicted that in the very near future radium would form as much a part of the up-to-date surgeon's armamentarium as the scalpel. In the same month a discussion was held by the Medical Society of London on "Advances in the Treatment of Cancer of the Cervix," and here it became clear that the chief advance lay in the successful application of radium. The same subject was discussed in April at a meeting of the London Association of Medical Women's Federation, and here it was pointed out that in the Mayo and other clinics radium was now used exclusively for cancer of the cervix, even in operable cases. In THE LANCET of April 28th we published an important address by Prof. G. E. GASK, which gave a cautious but broad review of the work now being done on the use of radium and its emanation. Prof. GASK ended his address by a deliberate endorsement of Mr. PINCH'S prediction mentioned above, and since the speaker has been personally directing some of the research prosecuted at one of the most active centres in this country his opinion must carry great weight. Last week Prof. S. RUSS, physicist to the Middlesex Hospital, made a valuable contribution concerning the physical basis of radium dosage, and to-day we are able to offer perhaps the most important contribution of all in the shape of the record of the work done at Manchester upon radium treatment of carcinoma of the tongue and mouth by Dr. G. E. BIRKETT.

This country has lagged behind America and the continent of Europe in knowledge and practice of radium therapy, a fact partly to be accounted for by the comparatively small amount of radium available in Great Britain, so that original investigation has been undertaken only by a small number of workers. The result has been that few extensive reports of actual clinical work have been published here, and few people have had the opportunity of gaining first-hand impressions of its value from actual examination of patients treated. It is, ultimately, the practitioner to whom the appeal must be made, and he, not unnaturally, will demand concrete and convincing evidence of the efficacy of radium before he will extend his demand for the treatment to be applied to the particular patients under his care. To the practitioner, therefore, we commend the evidence contained in Dr. BIRKETT'S exceedingly important article, and to Dr. BIRKETT himself we offer congratulations on his results. Last year a most encouraging report upon radium treatment of the tongue was published in the *British Journal of Surgery* by Mr. STANFORD CADE, whose work had been carried out at the Westminster Hospital. The number of patients treated at this centre was comparatively small, but served to demonstrate that radium was capable of producing in the tongue and floor of the mouth remarkable benefit as regards disappearance of the local signs of disease and restoration of function to the tongue. Dr. BIRKETT has carried the work a stage further, and has driven home the conviction that radium has produced results which could have been obtained in no other way, and that the advantages of radium must inevitably be extended to the so-called "operable" patient as well as to the "inoperable" class with which Dr. BIRKETT has mainly had to deal. This distinction of classes will disappear with the purely surgical standpoint which gave it birth. Further confirmation of this view is to be found in a comprehensive article on "Operative and Radiological Treatment of Malignant Tumours of the Mouth" by ELIS BERVEN in a Scandinavian journal,[1] and additional important evidence may be expected when the International Convention on Cancer meets in London in July.

Mastery of the technique of radiotherapy is advancing swiftly and with it comes the dawn of a new era in the treatment of cancer. Already it has been mastered in the *local* treatment of carcinoma of the tongue and floor of the mouth, of the cervix uteri, and perhaps of the breast. If radium can effectively be brought into contact with a cancer the growth can be made to disappear. The question of the treatment of glandular and other metastases is bound up with the surgical opening up of routes to the deeper parts of the body, the so-called "surgery of access." The term "surgery of access" shows that even in the new era the radiologist and surgeon must work together; most efficient of all will be the man who can combine surgical with radiological technique in his own repertory. A very brief survey of this field has recently been published by Mr. A. B. and Mr. S. M. SMITH,[2] who have necessarily derived most of their information from the publications of continental radiologists. They point out that the mere possession of radium is not in itself sufficient for the production of good results. One operator, who took over the control of the work previously done by another, obtained with the same radium and the same apparatus strikingly inferior results until he had acquired the necessary clinical judgment; and this is begotten only of experience and constant practice. This observation suggests an important corollary. It is obviously of prime necessity for the credit and advancement of radiological work in this country that an entire hospital, with adequate equipment of beds and radium, should be devoted to its study. The Radium Institute has already done much in this direction, but its resources have not been adequate for the study of the larger problems. Is it too much to hope that a radium hospital may soon spring into existence? We have reasons for believing that even this seeming miracle may before long be an actuality, and the possibility raises the further problem of the provision of radium salts. The world is known to possess a considerable supply which is not yet in therapeutic use, and a virtual monopoly of its sale is possessed by a continental company. More than this, the importation of radium into Great Britain is very seriously hampered by the imposition of a Government duty which adds a third to the initial cost. It is obvious that this should be brought to the notice of the Cabinet, since by far the most important use for radium is its application to the treatment of cancer.

[1] Acta Radiologica, Stockholm, December, 1927, viii., 473.
[2] Radium in Cancer and the Surgery of Access. By A. B. Smith and S. M. Smith. London: H. K. Lewis. 1927. Pp. 56. 3*s*. 6*d*.

Whatever its uses may be in naval guns or other engines of war it is the duty of a humane Government to give greater encouragement to the alleviation of suffering and to the saving of human life than to the means of its destruction.

THE ERROR OF BALLONIUS.

IT is now some two and a half centuries ago that GUILLAUME DE BAILLOU, a medical graduate of Paris, first coined the attractive word "rheumatism" to include a group of painful affections of the joints. Though his little book was not published until long after his death, and then only in Latin, in which it is described by the editor as a truly golden pamphlet, BALLONIUS'S conception has been generally adopted and the word which he used has remained as an inclusive term covering our substantial ignorance of what it connotes. So long ago as 1864 HIRSCH conjectured that rheumatic fever was a specific infective disease, and 30 years later SINGER claimed it as an attenuated pyæmia of streptococcal origin; but while the acute rheumatism of childhood thus came to hold a distinct position within the group of rheumatic diseases, its name remains a source of confusion in the public mind; whilst the remaining conditions which share the title of "rheumatism" form an inchoate mass.

In no other group of diseases, perhaps, has the nomenclature been so confused as in the group of chronic rheumatic diseases. Three recent reports[1] from the Ministry of Health have each in turn called attention to this confusion and have endeavoured to throw some ray of light into it. The first of them, issued in 1924, was based upon the results of an inquiry addressed to insurance practitioners in England and Wales, of whom some 90 responded. Their observations are of particular value in elucidating what the term "rheumatism" ordinarily connotes in the mind of the general practitioners who are brought most closely in contact with it. One of them sent in records of 223 cases occurring in a panel practice of 4000 persons. After mature consideration of all their reports the medical officers at the Ministry, forming a committee on rheumatism, decided to classify rheumatic diseases into the three main groups: (*a*) acute rheumatism (rheumatic fever, together with subacute rheumatism); (*b*) non-articular manifestations of so-called "rheumatism" (muscular rheumatism and fibrositis); and (*c*) diseases characterised by chronic joint change. It was after considering the conflicting pronouncements of recognised authorities that this modest clinical classification was adopted; for the terms "rheumatoid arthritis," "osteo-arthritis," and "arthritis deformans" were regarded as synonymous by some and as possessing distinctive shades of meaning by others. One agent of exactitude is lacking because these conditions are rarely fatal. Although they account for a drain on health insurance funds, amounting to at least one-fourteenth of the total sum paid in sickness and disablement benefit, their names do not often appear on death certificates. When, however, rheumatism or arthritis is included among causes of death, the Registrar-General is in the habit of asking for further information, although he accepts as adequate such terms as subacute rheumatism or rheumatic gout. In the latest report from the Ministry, Dr. ALISON GLOVER once more finds himself unable to define the significance of the older terms, and quotes conflicting definitions. For himself he is willing to recognise—setting aside gout—the two broad groups of rheumatoid arthritis and osteo-arthritis, while the climacteric arthritis of women at the menopause is considered by some sufficiently clear-cut to deserve a class to itself. About 10 to 15 per cent. of the total cases of chronic arthritis are so intractable to treatment as to have produced a wide-spread impression that we are here dealing with an incurable disease. He is, however, satisfied that one-third of all cases could be cured, at least another third relieved, and that in few chronic diseases is early and proper treatment so effectual. An appendix on the treatment of rheumatic diseases abroad, written by Dr. R. FORTESCUE FOX and Dr. MARGARETHE MAUTNER, will prove valuable at a time when a more progressive attitude towards rheumatism in this country is at last being reflected in action.

DR. GLOVER'S report appears most happily on the eve of the Bath Conference. This Conference, which is proceeding under the presidency of Sir GEORGE NEWMAN, whose opening remarks appear on another page, has as one of its main objects to obtain some orderly definition of the pathological conditions covered by the term "rheumatic diseases" in order to facilitate systematic inquiry into the predisposing factors of the different groups. The Conference, however, will have proved a failure unless it recognises the value of action as well as theory. The fundamental uncertainties of diagnosis, for instance, can best be cleared up by continual and intensive study at an early stage. The situation demands that we should be pragmatists, facing problems as well as relationships and the so-called rheumatic diseases present several which are for all practical purposes distinct. First there is the prevention, treatment, and care of heart disease in children; secondly, there is the need to prevent or diminish the damage done by focal sepsis in both adults and children; and, thirdly, there is the problem of ambulatory or palliative treatment in adults alone. The knowledge we already have is sufficient to do much good if it were properly applied. The conference at Bath may be taken as a symptomatic of the new movement against rheumatism which, although more systematically conducted on the continent, has had its origin in this country. If it serves to concentrate attention on the practical and immediate aspects of the question it cannot fail to bear good fruit.

[1] Reports on Public Health and Medical Subjects: No. 23, The Incidence of Rheumatic Diseases. 1924. 2*s*. 6*d*. No. 44, Acute Rheumatism in Children in its Relation to Heart Disease. 1927. 1*s*. 6*d*. No. 52, A Report on Chronic Arthritis with Special Reference to the Provision of Treatment. By Dr. J. A. Glover. 1928. 1*s*. 6*d*.

PULMONARY ATHEROMA.

ACQUIRED disease of the pulmonary artery and its branches is a rare post-mortem finding, but still rarer is diagnosis of the condition during life. Nevertheless evidence is accumulating that this lesion may be associated with a fairly definite clinical syndrome. AERZA, ARRILLAGA, and other South American writers have recorded under the title of "cardiacos negros" a group of cases in which the principal clinical manifestations are intense cyanosis with dyspnœa, hæmoptysis, somnolence, and polycythemia. Autopsy revealed atheromatous changes and dilatation of the pulmonary artery with extreme hypertrophy and dilatation of the right heart. These patients gave a history of having suffered from some chronic pulmonary complaint for many years before developing cardiac symptoms, and it is suggested that the characteristic lesion may be attributed to the effects of chronic emphysema on a pulmonary artery which

has been weakened by some intoxication or chronic infection such as syphilis or malaria. A very similar clinical syndrome was described by ROGERS in natives of Bengal in whom a syphilitic form of pulmonary atheroma led to enormous hypertrophy and dilatation of the right heart with dyspnœa and cardiac dropsy. In this country COOMBS, CLARKE, HADFIELD, and TODD [1] have recently recorded five cases of extreme cyanosis which post-mortem showed advanced changes in the pulmonary artery and its branches. They point out that in some of these cases there is no evidence of syphilis or of any antecedent lung disease. They suggest that another possible ætiological factor may be an inborn defect in the wall of the pulmonary artery, and that the dilatation and hypertrophy of the right heart which, as they remark, is greater than in any other acquired disease of the heart or lungs, is attributable to the impairment of the elastic properties of the arterial wall. When the cyanosis dates from birth, it is unlikely that a more precise clinical diagnosis than that of "congenital heart disease" will be possible, for it is only in such congenital lesions as pulmonary stenosis and patent ductus arteriosus that the auscultatory phenomena are sufficiently distinctive to enable the physician to determine more precisely the anatomical condition. It might be expected that dilatation or sclerosis of the pulmonary artery would always give rise to a basal murmur, but the cases reported by COOMBS and his associates show that this is not so, the murmur in some of their cases was confined to the region of the apex-beat and suggested a left-sided valvular defect. When, however, the physical signs of pulmonary or cardiac disease are insufficient to account for the presence of an intense cyanosis which first makes its appearance in adult life, pulmonary sclerosis is a possibility which deserves consideration, and corroborative evidence from X ray examination should be sought, since both the widening and the abnormal density of the shadow of the pulmonary artery are striking features. The facial appearance of these patients suggests polycythemia vera, and it is not improbable that some of the patients in whom that diagnosis is made, in the absence of splenic enlargement, are really suffering from pulmonary sclerosis. COOMBS and his co-workers do not regard mechanical stress as the primary factor in any of their own cases, though admitting that it is probably responsible for the arterial lesion in the type described by ARRILLAGA which supervened on a chronic pulmonary lesion. Somewhat similar though less pronounced changes in the structure of the pulmonary artery are found in old-standing cases of mitral stenosis and are presumably to be explained by the mechanical strain which this particular valvular lesion throws on the artery.

[1] Quarterly Journal of Medicine, 1927, xxi., 51.

EXAMINATIONS FOR MENTAL NURSES.—The General Nursing Council for Scotland have replied in an open letter to the resolution passed by the Royal Medico-Psychological Association on Nov. 17th, 1928. This resolution was designed to secure that nurses who had passed the Association's examination for proficiency in mental nursing should be entitled to be placed on the register of the G.N.C., the examination being subject to such supervision and standard as the G.N.C. might see fit to impose. The G.N.C. for Scotland agree that it is regrettable that there should be two authorities conducting examinations, and in view of the fact that the Association desire to continue to issue their certificate they suggest that the preliminary examination of the General Nursing Council should be accepted by the Association, and that a final examination might be arranged jointly by the two bodies. It is suggested that a conference should take place for discussion of this proposal.

Annotations.

"Ne quid nimis."

THE NEW PHARMACOLOGY.

FOR 65 years the British Pharmaceutical Conference has issued with regularity a Year Book of Pharmacy, containing a record of the annual increase in our knowledge of drugs and their actions. It has been for the most part no hardship for the medical profession or indeed for the public to wait a year before these things were made known; they did not seem to touch human health and happiness very closely. But with the recent astonishing development of pharmacological research it has now been felt undesirable for the data so obtained to be held up for an annual publication; hence the appearance of the first number, dated January to March, 1928, of a *Quarterly Journal of Pharmacy and Allied Sciences*, which incorporates the Year Book of Pharmacy, and is published [1] by direction of the Council of the Pharmaceutical Society of Great Britain. In an introductory note to this first number Sir John Rose Bradford makes it clear what the new outlook means. Fifty years ago pharmacology was cultivated only by a small minority of teachers and investigators—Sir John singles out for honourable mention Christison and Fraser in Edinburgh, Brunton, Cash, and especially Ringer in London—and much of the therapeutic pessimism not uncommon a generation or two ago was due, as he points out, in part to the uncertain results then obtained with many drugs that were in truth valuable, but which failed owing to variation in potency. Digitalis is cited as a good instance, and the first article in this new publication deals with the pharmacological assay of digitalis by different methods, in which evidence is given to show that the international powder is a practicable standard for digitalis leaf and tincture in Great Britain. Its adoption would entirely remove from the practitioner's mind the disturbing reflection that failure of the heart to react to his treatment may be due to the inefficiency of the drug supplied to him. Sir John describes the preparation of the active substances elaborated by the ductless glands as an achievement of outstanding importance, for here, he says, we are dealing with a pharmacy that is almost indistinguishable from the normal physiology of the organism. The successful synthesis of these substances opens up a further vista of possibilities. Pharmacy, so long regarded as ancillary to medicine, has almost reached the time when the servant may be said to be as great as her master. This result is very largely due to the Pharmaceutical Society, established in 1841 for the purpose of advancing chemistry and pharmacy, which has achieved so much in spite of being a voluntary association with only a moral obligation to join its ranks. The school of pharmacy, which is now a school of the University of London, is more than 85 years old, and the research laboratories in connexion with it, founded in 1888, were extended in 1926 by the institution of a pharmacological laboratory for research on the standardisation of drugs and preparations by biological methods, with the addition last year of a department for the testing of material for vitamin content. It is the rapid development of the laboratory in the latter respect which will make the quarterly issue a matter of eager expectation. In this issue, for example, appears amongst other relevant articles, a note on a method of assay of the antirachitic vitamin D, by which the potency of any substance can be expressed in terms of this standard. The standard adopted by the Pharmaceutical Society is such that a daily dose of not more than 0·0001 mg. will produce complete healing of rickets induced in rats under the conditions described. The *Quarterly Journal* remains in the able hands of Dr. C. H. Hampshire, editor of the Year Book, with the assist-

[1] London: The Pharmaceutical Press, 17, Bloomsbury-square, W.C. 10*s.* per copy; 30*s.* per annum if paid in advance. Binding covers free.

ance of an editorial committee of which Mr. J. T. Humphrey is chairman, and the medical members of which are Dr. J. H. Burn, Dr. H. H. Dale, and Dr. W. E. Dixon. The success of the new publication is assured.

THE DOG AND CAT IN DERMATOLOGY.

So far as we know, the only cutaneous diseases that can be contracted from the dog or cat are scabies and ringworm, but in these days of domestic pets the chances of such infection are by no means remote. Hudelo and Rabut [1] state that the scabies of dogs, which is caused by an acarus morphologically similar but smaller than that of human scabies, is less common than the feline variety, which is due to the *Notaedris cati*, an even smaller parasite. Both infections seem to require prolonged and intimate contact with the offending animal—e.g., in bed—and neither parasite burrows in the human skin, thus rendering diagnosis a matter of doubt and difficulty. The presence of isolated intensely pruriginous papules, capped sometimes by a minute blister, usually on the flexor aspects of one or both forearms, or on the abdomen, or one shoulder, should arouse the suspicions of the practitioner and, in spite of the absence of acarine runs in the finger webs, on the breasts, or the penis should suggest an atypical scabietic infection. The possibility of animal transmission may make it necessary to examine the animal suspected. In the dog, according to Hudelo and Rabut, scabies is manifested by fine desquamation on the anterior borders of the ears; in advanced cases there is patchy loss of hair and an eruption of papules and pustules over most of the body. In the cat it may set up a generalised inflammation with greyish crusts spreading from the scalp, which is denuded of its hair, as far as the neck, such a condition being often severe and sometimes even fatal. A characteristic sign is coexistent infection of the paws from violent scratching of the ears. The treatment of scabies contracted from a cat is simple and the infection subsides almost as soon as the animal is removed. The canine variety is not so easily eliminated, and the inunction of sulphur or some antiparasitic ointment is usually necessary. As regards ringworm, the identification of the various species will demand a careful cultural technique, which Sabouraud has elaborated in his famous work, "Les Teignes." There are three great classes, the trichophytons, the microsporons, and favus. They may attack the glabrous skin and the hair both of the scalp and beard, and recently the important observation has been made that follicular eruptions on the back and chest of children are sometimes attributable to trichophytides, which have reached this secondary site by way of the blood stream.

THE STORAGE OF SPERMATOZOA.

WE have still much to learn about the physiology of the male reproductive system. Dr. Robert M. Oslund [2] tells us that in the course of a series of experiments involving ligation and resection of the vas deferens in animals he became interested in the question of the storage of spermatozoa. He found that in the seminiferous tubules there occurs an accumulation of colloid material derived from the breaking down of spermatocytes and spermatids. This colloidal fluid moves slowly along the tubules, its movement being determined by the vis a tergo rather than by active contraction on the part of the seminiferous walls. When the fluid enters the epididymal canal it comes under the action of the ciliated lining, but in the author's opinion the influence of this is insignificant in comparison with the force exerted by the accumulation of spermatic material behind it. The motility possessed by the spermatozoa probably does not exercise much influence on the progress of the fluid or of the spermatozoa through the tubules. Benoit has reported that the epididymis secretes a substance which nourishes and activates the sperm and states that spermatozoa are more active in the tail of the epididymis than they are in the head. Oslund was not able to confirm these observations and believes that the main motive power of the spermatozoa is derived from the pressure of secretion from behind. As far as he could see there is in man very little storage of spermatozoa anywhere in the genital tract. Certainly the vesiculæ seminales cannot be regarded as reservoirs and spermatozoa found within them in cadavers must be regarded as invaders rather than as normal inhabitants. As the result of the constant passage of sperm from the testis towards the urethra spermatozoa are found frequently in the urethra and in the urine. During coitus there occurs a speeding up of the movement of the sperm along the vas deferens. This is due to contraction of the muscles of the epididymis and vas deferens including the ampulla which decreases the volume of the tubules and forces spermatic fluid towards the urethra. These contractions are observed after stimulation of the hypogastric nerves; they also occur spontaneously and more especially during coitus when they supply the chief mechanism for the transportation of spermatic fluid.

[1] Paris Médical, Jan. 21st, p. 56.
[2] Jour. Amer. Med. Assoc., March 17th, 1928.

THE BLOOD IN TUBERCULOSIS.

AFTER a cytological study of the blood in patients suffering from pulmonary tuberculosis, R. S. Cunningham and Edna H. Tomkins [1] claim that in this disease the white cells undergo very definite changes in number and character, and in particular that the monocytes are always multiplied. The "supra-vital" technique introduced by Sabin was employed in their investigation, as it facilitates differentiation between the monocytic and lymphocytic types. So convinced are these observers of the importance of this change that they would hesitate to accept a diagnosis of pulmonary tuberculosis if the patient's blood failed to show an elevation of the monocyte count. The lymphocytes show a reciprocal relationship to the monocytes. Thus the latter increase during infection while the former decrease, the monocyte serving as an index of dissemination and the lymphocyte of resistance. A progressive decrease of the lymphocyte count suggests a grave prognosis. It is possible that some specific toxin of tuberculosis acts as a stimulant to the monocytes and a depressant to the lymphocytes, so that the ratio between the two types of cell may thus be used as an index of the relation of the processes of infection to those of resistance. Enumeration of the white cells of the blood may thus, they consider, be useful in both diagnosis and prognosis.

THE BEGINNINGS OF LOCAL ANÆSTHESIA.

THE inestimable benefit that cocaine has proved to be as a local anæsthetic in eye surgery and the perhaps equal services that its synthetic derivatives now afford for infiltration anæsthesia render the history of the first employment of the drug of considerable interest. It is to Dr. Carl Koller, formerly of Vienna, now of New York, that ophthalmic surgeons owe the discovery of its practical application. In a personal communication he informs us that long before 1884 he had been conducting experiments with such substances as chloral, bromides, and morphia in the hope of obtaining an efficient local anæsthetic for the eye, but without success. The alkaloid cocaine had been isolated from coca leaves brought from Peru so long ago as 1860, and its numbing effects on the nerves of the tongue had been recorded, but lost sight of in view of the overshadowing effects of the drug on the central nervous system.

"When in the course of preparing for these physiological experiments," writes Dr. Koller, "I realised that I had in my possession the local anæsthetic which I had been previously striving for, I went at once to Stricker's laboratory, made a solution of cocaine, and instilled a drop in the

[1] American Review of Tuberculosis, March, 1928.

eye of a frog, and afterwards of a guinea-pig. I found the cornea and conjunctiva anæsthetic—that is, insensitive to mechanical, chemical, thermic, and faradic stimulation. Afterwards I repeated these experiments on myself, some colleagues, and many patients. I made the first preliminary communication relative to this subject on Sept. 15th, 1884, at the Heildelberg meeting of the German Ophthalmological Society. Dr. Brettauer, of Trieste, read a short paper which I had given him together with the solution to take to the meeting, and showed the experiments. On Oct. 17th of the same year I read before the Gesellschaft der Aerzte of Vienna a more elaborate paper which was published in the *Wiener Medizinische Wochenschrift* for Oct. 25th, 1884, and translated in THE LANCET (London) of Dec. 6th, 1884, and the *New York Medical Record*."

The news of the new drug which did away with the necessity of a general anæsthetic in nearly all eye operations spread with remarkable celerity. Already before the end of the year 1884 three papers on it were read before the Ophthalmological Society of the United Kingdom by the late Arthur H. Benson, the late E. Nettleship, and the late Walter Jessop.[1] Nettleship had already operated with cocaine for 18 senile cataracts, besides numerous other operations, his first operation having been on Oct. 10th, less than a month after Dr. Koller's paper had been read at Heidelberg. Its use soon became and has remained universal among ophthalmic surgeons. At Dr. Koller's suggestion the drug was shortly afterwards utilised by his laryngological colleagues. The employment of infiltration anæsthesia was a subsequent development. It is fitting that these facts should not be forgotten during the lifetime of the discoverer.

CHEMICAL CHANGES IN CULTURE MEDIA.

IT has been a reproach for many years to the bacteriologist that he has been too much occupied with certain aspects of his studies, particularly with pathogenicity and special differentiating tests, to pay proper attention to the nature of the chemical changes taking place in the media which he employs. These media are of a very complicated character, the difficulties of their investigation are correspondingly great, and progress cannot be other than slow. Reliable methods of estimation are, of course, a necessary precursor for any clear advance, and a recently issued report [2] embodies studies of this order and adds to the number of trustworthy methods now available. By the use of Foreman's alcohol titration method and its modifications it is possible to obtain what the authors call reliable balance-sheets, in which the total values for constituents estimated in groups are equal to the sum of the values for the subgroups. The methods used are described in the text. The "total alcohol value" of "alcohol extracts" made from such fluids as meat extract media, can be successfully differentiated into subvalues for the different classes of, and radicles embraced by, new rapid methods, and the results can be checked by balance-sheet methods. The medium used was a plain ox heart extract with tap water and without salt or peptone additions. The *Staphylococcus aureus* was grown in such extracts of differing concentration and the chemical and bacteriological changes were studied under different conditions. These changes are complex and only a few points can be noted. The curve of bacterial growth is characterised by two peaks, the first reaching its maximum on about the fourth day and the second on about the twenty-eighth day. Between them is a period in which the numbers are small, while after the second peak the numbers again decrease. These phases correspond to definite chemical changes. For example, during the first period of rapid growth there is the production of volatile bases alone, unaccompanied by any appreciable development of acids. Apparently amino-acids are not the source of the volatile bases. Before this first phase is completed the second phase, that of the production of volatile and non-volatile acid radicles, in approximately equal proportions, commences. In the third phase non-volatile acid radicles alone are produced. The second period of growth (about the twenty-eighth day) is chiefly characterised by the conversion of non-volatile acid radicles into equivalent amounts of volatile acids, and the content of volatile acids reaches its maximum by the time the second peak of growth has been reached. The inorganic phosphorus content also varies in relation to the organic phosphorus content. These and other chemical changes are best studied in relation to the charts shown.

A further report [3] by the same authors deals with the effects of certain salts upon changes in hydrogen-ion concentration, and with the rôle of creatinine in the control of reaction in cultures. The points discussed, which are of considerable technical interest, can only be appreciated by a study of the report itself.

COMPARATIVE IMMUNITY.

NEW journals devoted to one or another aspect of the medical sciences continue to emerge at frequent intervals. Among the latest is the *Archives roumaines de pathologie expérimentale et de microbiologie*, published in French, in Paris, and edited by Prof. J. Cantacuzène, of Bucharest, who occupies the greater part of the first number with an instalment of his researches on the mechanism of immunity in the marine gephyrean worm *Sipunculus*. It is a classical field, for it was when he was working with similar material, and when, as he tells us, his family had gone to a circus to see some extraordinary performing apes, that the revelation came to Metchnikoff, at Messina, in the early days of 1883, that phagocytosis was a means of protection against injury and disease. In the special case which he has investigated Prof. Cantacuzène shows that foreign bodies, such as bacteria or sheep's red corpuscles, injected into the cœlomic cavity are enveloped in leucocytes and gathered up into masses by the mucous secretion of the "urns," enormous ciliated cells whose function has long been something of a mystery. By these means the cœlom is soon cleared, and one is reminded of the way in which leucocytes and platelets clear the blood and the omentum clears the peritoneal cavity in mammals. Specimens of *Sipunculus* which have previously been vaccinated react in the same way, but quicker, the secretion of the "urns" is more acid and hence more adhesive and, in addition, agglutinins and cytolysins are produced, though, as is usual in invertebrates, the cellular side of the defence is much more active than the humoral. From which it may be surmised that the protective effect of vaccination is likely to be less specific than in the higher vertebrates. Such has indeed lately been shown by Chorine,[4] who found that various bacteria would immunise the caterpillars of the wax moth *Galleria* against the variety of *Bacillus subtilis* which is pathogenic for it.

TUMOURS OF THE LUNG.

MEDIASTINAL tumours have always had special interest, clinically and pathologically. Their increase in recent years and the recognition that the majority are not sarcomas of mediastinal glands but carcinomas arising from the larger bronchi makes any further information about them of value and we welcome a survey by Prof. T. Shennan of his experience in Aberdeen.[5] The 31 cases accumulated in some 12 years include a spindle-cell sarcoma of mediastinal glands, a lymphosarcoma of thymus, 4 tumours arising in the thymus with a structure resembling lymphadenoma, and 3 secondary thyroid carcinomas; the

[1] Trans. Ophth. Soc., 1885, vol. v.

[2] The Changes Produced in Meat Extracts by the Bacterium *Staphylococcus aureus*. By F. W. Foreman and G. S. Graham-Smith. Food Investigation Board Special Report. No. 31. 1928. H.M. Stationery Office. 2*s*.

[3] The Control of Reaction in Cultures and Enzyme Digests. Food Investigation Board Special Report. No. 32. 1928. H.M. Stationery Office. 9*d*.

[4] Comp. Rend. Soc. Biol., 1927, xcvii., 1395.

[5] Jour. of Path. and Bact., 1928, xxxi., 365.

other 22 are carcinomas of lung. Nine of these are obviously epithelial in structure, while the other 13 belong to the well-known type with small oval cells which Prof. Shennan agrees with Mr. W. G. Barnard in interpreting as carcinomas. As usual, males predominated, only 4 of the cases being in women; in their occupations there is nothing suggestive, such as Dr. J. B. Duguid [6] found in Manchester. Anatomically however, it can hardly be without significance that some old-standing tuberculosis or fibrosis was present in at least 13 cases, and Prof. Shennan notes that many of the tumours arise from the main bronchi on which the chief incidence of influenzal catarrh falls; the suggestion has been made before that the recent increase in the prevalence of these tumours (which incidentally is not perceptible in the Aberdeen data) has something to do with the influenza epidemics of 1918 and 1919. Prof. Shennan increases the value of his paper by adding brief accounts of the clinical histories to his detailed anatomical and histological descriptions. The protean variety of the symptoms is particularly striking. One man dies suddenly with a profuse pulmonary hæmorrhage, another after many months of vague ill-health in which no localising symptoms were disentangled. The proneness of lung carcinomas to metastasis in the central nervous system is shown by the number of patients whose main or only symptom was due to this involvement; it might be headache or sciatica. It is also obvious that in a good many cases death is actually caused by secondary inflammations of the lung, due no doubt to the partial or complete blocking of the bronchi by the growth. In several instances profuse sweating, especially at night, was a prominent symptom.

ANÆSTHETICS IN GERMANY.

A PERUSAL of recent German medical periodicals brings to light the unusual amount of interest now being bestowed in that country on the subject of anæsthesia. Together with other continental countries Germany has suffered, and is still suffering, though to a diminishing extent, from the absence of medical men whose sole practice and chief interest is in anæsthetics. As a natural consequence the surgeon in those countries relies, much more than the English surgeon, on local analgesics whose application and effects he can himself study and control than on general anæsthetics, the safe administration of which requires the individual care of another skilled person. It was natural in these circumstances that "twilight sleep" should have its origin in Germany and find there its warmest support; for here appeared to be a method which provided many of the advantages of general anæsthesia without the same necessity for skilled attention to the patient during operation. In general surgery, however, "twilight sleep" has not provided a really satisfactory substitute for the administrations of skilled anæsthetists, and it has not, we believe, largely supplanted local analgesia in the majority of German clinics. An improved version of this method is said to give highly satisfactory results,[7] and the latest aspirant for answering those demands of the German surgeon which cannot be met by local methods is avertin. A large number, some thousands, of operations have now been conducted with the help of this rectal anæsthetic and the reports tend to be more uniformly appreciative than they were at first. A number of surgeons in whose clinics it has been widely employed have replied to a questionaire, and their answers show a large measure of agreement in commendation.[8] Some surgeons, however, regard the drug as too dangerous to be employed as a sole anæsthetic, although they approve of it warmly if used in small doses for the induction of unconsciousness and for the provision of a light narcosis which is rendered sufficient by very small amounts of inhalation anæsthetic. There seems to be universal agreement as to the pleasant nature of the induction of anæsthesia with this drug, and also as to the absence of deleterious after-effects. We are aware that avertin is now on trial at one or two London hospitals, and we look forward to an account of its estimation in this country.

[6] THE LANCET, 1927, ii., 111.
[7] Münch. med. Woch., April 6th, 1928.
[8] Deutsch. med. Woch., April, 1928; also Munch. med. Woch., April 6th, and Medizin Klinik, April 20th.

TOBACCO ANGINA.

THE effect of tobacco-smoking on the body, and especially on the heart, is of particular and often of personal interest to medical men. Strangely enough, as Dr. Eli Moschcowitz [1] has lately pointed out, not many first-hand observations have been made on the effect of smoking on the heart, and most of the statements in current text-books bear the imprint of literary legacies. Whilst recognising that tobacco-smoking may bring about varying conditions such as tachycardia and auricular or ventricular extra-systoles, Dr. Moschcowitz has paid special attention to the pains simulating angina pectoris which occurred in four of his patients, probably as a result of excessive smoking. The features distinguishing tobacco angina from true angina pectoris are that it is more intense and of longer duration than true angina and is usually accompanied by little or no disturbance of the cardiac function; further that unlike true angina the pains are more likely to arise during complete rest, and may even awaken the patient from a sound sleep. An interesting feature to which Sir Humphry Rolleston has also drawn attention is that patients who have once had tobacco heart may show signs of sensitisation to tobacco smoke, and pain may be induced by smoking a cigarette, or even by being present in a smoke-laden atmosphere. The anginoid pains may arise in patients who have apparently healthy hearts, or in those who have previously shown signs of coronary or aortic disease. In both types the use of tobacco should be absolutely forbidden. It is not enough merely to reduce the amount of smoking. The pains do not cease immediately after the withdrawal of tobacco, but may persist for periods of time varying from a week to three months. The mechanism of tobacco angina is not known, but it is probably due to the constricting action of tobacco on the coronary blood-vessels. The pain bears a strong resemblance to true neuralgia in that it is not induced by exertion or emotion. All four patients described by Dr. Moschcowitz had smoked for many years; their ages varied from 35 to 62, and one was a woman who had smoked cigarettes to excess. Neither the variety of the tobacco used nor the form in which it is smoked seems to be a factor in the causation of the pain.

[1] Jour. Amer. Med. Assoc., March 10th, p. 733.

THE ROYAL ACADEMY.

THE 160th Exhibition of the Royal Academy of Arts was opened at Burlington House last Monday and has received the modified congratulation of the critics, who find the level of accomplishment high but the æsthetic interest moderate. Save that the practice of medicine and the art of drawing have many relations which always repay attention, the display in itself appealed to no special medical interests. First there is a dearth of medical portraits, which is to be regretted from the artistic point of view, since the head of the distinguished physician or surgeon very usually lends itself to especially fine treatment. For an intimacy of presentation is obtained here by the painter which is denied him when depicting public men whose features are familiar, while even in official medical portraits the dress has not the aggressive quality of full uniform, court attire, or mayoral robes. Secondly, and not to be regretted at all, the subject picture with a medical theme has disappeared. This is not an endorsement of the view that a picture should be without a story, a view that is flatly contradicted by some of the finest pictures in the world; it is a word of thanks for being spared the kind of medical story in paint that is designed to be moving, but which so

rarely moves. There is, however, in the exhibition one direct appeal to medicine—namely, that furnished by six works of the late Mr. Charles Sims, all of which may be termed experiments in colour thinking. Mystical but purposeful, orderly in their incoherence, and pathetic in their brave attempt to tell what cannot be told and to interpret what cannot be known, we are not surprised to hear that there was official reluctance to display them. If this is so the contrary decision is a matter of congratulation; it was inevitable that the obscurity of these pictures should deprive them of popular appeal, and perhaps inevitable that some should regard them as the fruits of an aberrant mind, but no student of mental science would endorse this view. It is noticeable that in connexion with Sims's fantasies references have been made in the lay press to the colouring and composition of the work of El Greco, to the themes and treatment in Blake's illustrations, and to the well-known allegorical pictures of Watts, some of which can be seen in the Tate Gallery. It may be that these references were dictated with some idea of reconciling the work of Sims with that of more comprehensible but comparable artists, yet a large school of modern neurologists would not require to fall back upon any such matter-of-fact explanation as a proof of the sanity of these pictures. Whether Sims is able to communicate through his canvasses the thoughts that inspired him must depend upon the receptivity of the spectator, but his lovely attempts to do so merit admiration and sympathy.

THE CONTINENTAL ANGLO-AMERICAN MEDICAL ASSOCIATION.

IN our news columns appears a report of the first meeting of the Continental Anglo-American Medical Association which has been held since 1914. This Association was founded in 1889 to serve as a bond of union between British and American practitioners on the Continent of Europe and in Northern Africa, with the further object of furnishing useful information to the travelling public. For many years before the war the Association played its rôle in both respects; the membership was then about 125, whose names, addresses, and consulting hours appeared on a leaflet issued periodically as a directory by the Association. An annual dinner was arranged in Paris and the list of members enabled scattered practitioners to keep in touch with each other, especially with a view of knowing to whose care patients might be safely recommended when changing from one foreign resort to another. Five years ago, when the question of formal dissolution came up, we confessed to a sympathy with the minority who desired continuance, and expressed a feeling that if this minority chose to form the nucleus the opportunity of further association would arise. We are happy to see that this has now come about, and we warmly commend the Association to all English-speaking practitioners abroad. At present the names of those practising in Switzerland do not appear on the list.

THE next session of the General Medical Council will commence at 2 P.M. on Tuesday, May 22nd, when Sir Donald MacAlister, the President, will take the chair and give an address. The Council will continue to sit from day to day until the termination of their business.

Dr. R. King Brown, for 27 years medical officer of health for Bermondsey, is shortly to retire owing to ill-health.

THE voluntary hospitals have lost a good friend in Sir John Craggs, whose death in his seventy-third year occurred on May 2nd. A chartered accountant of high standing and a member of the Council of the Institute, he placed his services without reserve at the disposal of the Council of King Edward's Hospital Fund, was one of its honorary secretaries for a period of ten years (1897–1906), and was then elected to its Council. His book on Rate-supported *versus* Voluntary Hospitals may still be read with benefit by any who are studying the intricacies of a many-sided problem; his own conclusion was that in almost every respect the voluntary system scores in economy and efficiency. Sir John Craggs was especially interested in researches into tropical medicine. He was vice-president of the Seamen's Hospital Society for 26 years, and his benefactions to the London School of Tropical Medicine included a travelling scholarship and a substantial annual prize. He financed the antimalarial investigation carried out on the Roman Campagna.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXV.—TREATMENT OF RICKETS.

II. CURATIVE MEASURES.*

THE child who has developed rickets may be in apparently good general health and evidence of the disease may only be discovered on careful examination, or he may show all the classical signs of an advanced case. If treatment can be applied in the early stages, it is usually possible to remove all evidence of disease within a few months, but if severe deformities have occurred, they will persist long after the active stage is passed and possibly throughout life. If this is explained to mothers, even those whose coöperation is not readily given will generally try to ensure sufficient treatment for the child.

Treatment of the General Health.

Most rachitic children require treatment of the general health as well as treatment of the rachitic process itself, and the bone lesions are frequently "healed"—i.e., the bones and osteoid tissues are satisfactorily calcified—some time before the general health reaches normal. Treatment of the general health usually includes adjustment of the diet, since in these cases there has often been much dietetic mismanagement. After the age of weaning I usually advise the inclusion in the diet of one pint of cow's milk daily, three to five eggs weekly, and from the age of 12 months, meat also on three to seven days in the week. Outdoor life usually brings about an improvement in general health, in contentment, activity, and appetite, which can seldom be attained without it. In summer it will bring about healing of the bone lesions in all cases, but if the exposure to sunlight is scant healing may be slow unless other treatment is also given. Other means of improving the general health frequently include the provision of proper hours of sleep, suitable clothing, and, if possible, massage, but these are not directly curative of rickets.

Treatment of the Defective Calcium-phosphorus Metabolism and so of the Rachitic Bone Lesions.

The defective calcification of the bones is part of the active process of rickets—i.e., of the disturbed calcium-phosphorus metabolism. To renew normal calcium deposition in the bones we supply vitamin D in liberal amount, and this can either be given by mouth or be formed in the skin by exposure of the patient to ultra-violet light. Healing of the bone lesions usually proceeds at the same rate, whether the vitamin is provided by cod-liver oil administration or by artificial ultra-violet light therapy, or by exposure to sunlight. I have the impression that if the child does not get out of doors artificial light therapy produces greater improvement in the general health than does cod-liver oil alone. Cod-liver oil,

* Part I., dealing with Prophylaxis, appeared in THE LANCET last week.

begun gradually, can be used in double or more than double the prophylactic dose, say 1 to 1½ drachms of a 50 per cent. emulsion, or for an older child 1½ to 2 drachms of cod-liver oil and malt, three times daily. With adequate treatment an X ray plate of the long bones usually shows evidence of calcification of the osteoid tissue in 10 to 21 days, and calcification is complete in times varying from one month in very slight cases to perhaps four months or longer in severe cases, but, of course, rachitic deformities may persist for years or even throughout life. There is no evidence that more rapid effects can be brought about by the use of concentrated preparations of vitamin D, but when more is known as to suitable dosage these should prove a definite asset in the treatment of older children who dislike cod-liver oil or in infants with enteritis or digestive disturbance.

The Prevention of Bone Deformity.

Until the bone lesions are healed—i.e., until the bones are properly calcified—steps should be taken to avoid the production of any fresh bone deformities. Thus unless proper support is given to the back a chest sulcus may be increased by the child having a pillow under its head, or by its sitting in a hunched-up position with the back curved. Curvature of the bones of the lower limbs is often increased by bearing the weight of the body, and, in order to prevent this, all children able to stand should have a light straight splint, projecting several inches beyond the foot, applied to the outer side of the leg. This should be removed at night, or at other times when the child is not likely to try to stand, and only applied with the object of preventing standing while the bones are abnormally soft. The purpose of the splint should be explained to the mother. As soon as the X ray plate shows calcification to be nearly complete the splints can be discarded. If no radiograms can be obtained, splinting should be continued for, say, one and a half to four months after the beginning of treatment, according to the severity of the case, but the period is a matter of guesswork if no plate is available. If the case is only seen at the end of the summer, healing will probably be already advanced or possibly complete. There is one small point which may be helpful in such cases—if the costochondral junctions are of normal size while enlarged epiphyses and bending of the long bones are still present, this suggests that healing is complete—since a rachitic rosary disappears under treatment more quickly than enlarged wrist epiphyses—and in such cases it is unnecessary to prevent the child standing.

Orthopædic Treatment.

Three stages of the disease have been mentioned: the *active stage* of disturbed calcium-phosphorus metabolism and deficient deposition of calcium salts in the growing bones; the *healing stage* during which the blood-calcium and blood-phosphorus return to normal and calcium salts are laid down in the osteoid tissue of the bones as well as at their growing ends; and the *healed stage* at which the bones are fully calcified, but deformities may still persist though the bones tend steadily to recover normal shape. Provided no recurrence of rickets takes place the amount of improvement which may occur in bent long bones in the course of one to two years is remarkable, and except in cases of severe deformity operative treatment is undesirable before there has been time to observe what improvement is occurring as the result of growth. In many cases it finally proves unnecessary, even when the initial deformity was considerable. If special appliances are required—e.g., on account of knock-knees and lax ligaments at the knee-joint—the advice of an orthopædic surgeon should be obtained.

Treatment of Rickets Associated with Other Diseases.

There are certain diseases with which rickets is commonly associated. Spasmophilia is nearly always accompanied by rickets; in fact, it may be regarded as part of the symptom-complex of rickets associated with low blood-calcium instead of with low blood-phosphorus, the common form; hence antirachitic treatment should be given to all such cases, together with special treatment for any urgent symptoms such as convulsions or laryngospasm. The administration of calcium chloride, the drug most commonly used for rapid control of the symptoms of spasmophilia, does not *cure* the disease, and the child should be kept under observation until it has had an adequate period of antirachitic treatment.

Many cases of rickets first come under observation for bronchitis or other respiratory affections to which such children are particularly susceptible, and care should be taken to look for evidence of the underlying cause in such cases and to give specific antirachitic treatment whenever the presence of rickets cannot be excluded. Infants and young children with scurvy not infrequently show evidence of other dietetic errors, and as in both rickets and scurvy there is enlargement of the rosary and of the epiphyses, it is frequently difficult to be sure whether one is dealing with scurvy alone or with scurvy and rickets—hence it is as well to give a liberal supply of both vitamin D and C in such cases. In cases of chronic intestinal indigestion or of cœliac disease with defective absorption of fat, cod-liver oil is not a suitable agent for prophylaxis or cure of associated rickets, and in such cases a concentrated vitamin D preparation (not in oil) or light therapy is indicated.

There is a close association between nephritis in infancy and early childhood and the development of rickets, and authorities are not agreed as to whether the bone changes which are associated with renal disease differ in any essentials from ordinary rickets. The bone lesions of some at least of these cases respond to ordinary antirachitic treatment. The possibility of renal disease should therefore be especially borne in mind in every undersized child with severe rickets and in every case of rickets in a child over, say, 2½ years; and all young children with chronic renal disease should receive regular antirachitic treatment, probably both in winter and in summer.

HELEN M. M. MACKAY, M.D., M.R.C.P. Lond.,
Physician to the Queen's Hospital for Children.

The Services.

ROYAL NAVAL VOLUNTEER RESERVE.

THE King has approved of the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surg. Comdr. T. B. Dixon.

ROYAL ARMY MEDICAL CORPS.

Maj. J. du P. Langrishe retires on retd. pay and is granted the rank of Lt.-Col.

Capt. P. R. O'R. Phillips to be Maj. (Prov.).

ARMY RESERVE OF OFFICERS.

Lt.-Col. B. A. Craig, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

MILITIA.

Maj. W. A. Lethem resigns his commn.

TERRITORIAL ARMY.

Lt. O. G. Misquith to be Capt.

Lt. D. R. McGregor is secd.

Lt. N. F. C. Burgess, from supern. for serv. with Univ. of Lond. Contgt., Sen. Div., O.T.C., to be Lt.

A. Bowie to be Lt.

ROYAL AIR FORCE.

Flight Lt. T. K. Place is promoted to the rank of Squadron Leader (Dental) on promotion to Major in the Army Dental Corps.

RESERVE OF AIR FORCE OFFICERS.

F. G. Mogg is granted a commission in Class DD as a Flying Officer.

INDIAN MEDICAL SERVICE.

Temp. Lt. Bhagwant Kishore Sikand to be Temp. Capt.

Special Articles.

CONFERENCE ON RHEUMATIC DISEASES.

BATH, MAY 10TH–11TH.

THE Conference on Rheumatic Diseases now being held in Bath was opened on Thursday, May 10th, by Sir GEORGE NEWMAN, the President, who said:—

In the sixteenth century the Englishman was called a "sweater" because of the four or five strange epidemics of *sweating sickness* which began about 1485 and continued intermittently until 1551 and which it was alleged had been introduced from abroad. In the eighteenth century we were described as "tipplers" because of our alcoholic habit of excessive spirit drinking, and as a "pock-marked" people because of the wide prevalence of *small-pox*. In the nineteenth century we became notorious as a people who were the victims of *rickets*, *gout*, and *tuberculosis*. Now we are chastised with *rheumatism*. In this dark record there is, however, a bright ray of light. Sweating sickness, as such, has vanished; excessive addiction to strong and raw spirits is a thing of the past; no one need now have small-pox unless he wishes to have it; it is known that severe rickets and gout can be readily prevented; and the mortality of tuberculosis of the lung is less than a quarter of what it was in 1847. In a word, we have in one way or another found the answer to these six scourges, each of which threatened to be formidable in its day. They have been conquered, or at least can be conquered if and when we so desire.

The Problem.

We are met to-day to consider the nature of the campaign which should be organised if we would similarly control rheumatism. There can be no doubt as to the urgency of the matter, which has been made manifest: (1) by the advance in our knowledge of the heterogeneous group of morbid joint conditions; and (2) by the data furnished to us for the first time by the school medical service and the health insurance system. We now know that acute rheumatism of children is sowing seeds of a growing harvest of disease of the heart and nervous system; and secondly, we now know that the chronic forms of rheumatism are very seriously crippling many hundreds of thousands of our people, who are not only thus subjected to suffering and disablement, but are losing heavily both in time and money. This disease is now recognised to be every year a drag on industry, an evil incubus on the worker, a source of oppressive financial loss to the State, and a protean cause of excessive mortality and ill-health. We are all here because we are deeply convinced that there is need for coördinated action for the thorough and continuous investigation of this malady in all its forms, and then for a well-devised and systematic attack upon it. Coöperation will take different, though converging, paths, for though the problem is one in issue, it is manifold in aspect.

The Chief Medical Difficulties.

Our main difficulties are three. First, we cannot yet exactly define the respective relation of the varied forms of rheumatism to each other, nor their distribution over the world generally or in our own country; secondly, we do not know with certainty the *causa causans* of this morbid group, though we are learning to circumscribe and differentiate their predisposing conditions; and thirdly, our varied medical experience is not yet in working accord as to the best means of treatment. No doubt some of the divergence of view as to treatment is due to the lack of what the engineers call "assembly of parts," and some to the fact that new methods of investigation and of physico-therapeutics are of recent invention or application. What is needed, in fact, is the assembly of all the parts, the unification and harmonising of all the experience available—experimental, clinical, and therapeutic. Hopeful advances are being made in all three directions but they await *integration*. For instance, in treatment, some swear by light and heat, others would be saved by water; some swear by massage and manipulation, others by rest; and some, rightly enough, do not swear at all, but proceed from case to case with tentative empiricism.

We must not forget that medicine has often enough won its way by empirical methods and the evidence of circumstance. The validity of vaccination as protective against small-pox was established by Jenner in 1798, though the infective cause of the disease was unknown and, what is rather strange and surprising, remains unknown to-day. Enteric fever was both controlled and successfully treated long before the bacillus was isolated by Eberth and Gaffky in 1884. Typhus fever was likewise conquered though its cause had not been elucidated. Koch discovered the bacillus of tuberculosis in 1882, but the disease was successfully treated and had begun to decline 40 years earlier. The history of the pathology and prophylaxis of these four diseases is deeply instructive, and I commend a consideration of it to all students of medical progress. There is perhaps a tendency at the present time for persons blessed with the faculty of curiosity but not with the virtue of circumspection to plunge into the study and treatment of disease with insufficient regard to the history of man's growing control of morbid processes, a control exercised primarily through a wider understanding of physiology and pathology.

Acute Rheumatism.

We now know that acute rheumatism begins as a disease of school age (5–14), though not a disease spread by the elementary school. It is at school age, therefore, that we must first both explore and prevent. We must explore the obscure signs of invasion; we must prevent the subsequent *polyarthritis*, *carditis*, and *chorea*. It is estimated that this infection is responsible for 80 per cent. of the deaths from heart disease under 20 years of age and 40 per cent. of the total cardiac mortality, itself the principal certified cause of death in England.

The cause of the disease is not yet fully proved, but the hypothesis which at present holds the field is that acute rheumatism is the reaction of the human body to the presence of the *Streptococcus viridans*. This organism is widely distributed, is frequently found as a harmless saprophyte, or as the causal agent in lesions which have nothing to do with rheumatic fever. If it be, as is believed, a common, perhaps a constant, habitant of the body, we must concentrate our attention on the conditions, circumstances, or predispositions, external or internal, which induce it to assume an activity which results in rheumatic fever. It would appear to be as futile to attempt to annihilate this streptococcus as it would be to exterminate the bacillus of tuberculosis. In our attack upon either of these diseases we must direct our main efforts to the fortification of the human body, to the exclusion from it of the invading micro-organism, or to the frustration of the activities of the micro-organism within the human body. This largely resolves itself into a question of those social conditions of the child which lead to rheumatic infection. Sometimes it may be coldness or chill in susceptible children, a damp house, or inadequate and unsustaining food, or unsuitable clothing, boots and shoes, or "feckless" mothering. To discover that a certain percentage of rheumatic children hail from "damp" houses—an elusive character of house property to measure—is not necessarily to discover a primary predisposition, for many other such cases come from dry houses, and after all a large majority of non-rheumatic children in any given district may also live in "damp" houses. Damp houses are no doubt undesirable, but living in damp houses does not, of itself, produce acute rheumatism. There are more damp houses in rural than in urban districts, yet the disease is ascertained proportionately to be more incidental in urban areas. It is the *total social, domestic, and physical upbringing of the child* which

seems to be the common denominator. For this is what affects the constitution of the child in the long run, which tends to make its tonsils and lymphoid tissue receptive rather than resistant, which gives us in a word a *susceptible* child, or which favours the development of infection within its body. Therefore, closer supervision by parents and teachers should be exercised over all children under the age of 14, in order to detect the earliest signs of rheumatic infection —"growing pains," nervousness and twitchings, repeated tonsillitis or chronic sore-throat, pallor and shortness of breath, and dental sepsis, which may be indicative of the liability to, or even the onset of, rheumatic fever. Such conditions call for early detection and prompt treatment. We have many agencies now available for this purpose—infant welfare centres, school medical service, hospitals, the medical practitioner, and so forth, but we do not use them sufficiently for this specific object, nor do we coördinate them as fully as we ought.

Speaking broadly, therefore, we must seek steadily to improve the personal and environmental hygiene of childhood, we must exercise a closer and more vigilant supervision of these susceptible children by the infant welfare and school medical services, and we must organise our methods of diagnosis and treatment of those found to be suffering from the disease. Definite steps of this nature have recently been taken in America and also in this country (particularly at Birmingham, Bristol, London, Glasgow, and elsewhere, with 400–500 available beds).

The Rheumatism of the Adult.

When we turn to the rheumatism of the adult we find further confirmation of the need for organised, intensive, and comprehensive investigation, not only in the laboratory, but at the bedside, and even in the factory and workshop. As in acute rheumatism, so here, we need research into the social and causative aspects; we need to pool our experience of therapeutic measures. It is the integration and coördination of the immense stores of experience now being acquired which is the principal desideratum at the present time. Every medical practitioner can help in this field of study. If the holding of this conference encourages the whole profession to cease to work in water-tight compartments in this disease it will do great good. The consultant and the specialist should be invaluable to the public medical services, as they in their turn should serve him. Nor is medical coöperation our only need. There are many contributory public agencies in the State, and the time has come for them also to combine against this common enemy. The maternity and infant welfare services, the school medical service, the poor-law, national health insurance, the hospitals, and the voluntary health societies could render much assistance by addressing themselves to the solution of this problem which, like tuberculosis, has a very wide, almost a universal, social province.

In spite of the darkness which surrounds chronic rheumatism there is some brief general counsel which may be given to all persons suffering from any degree or form of chronic rheumatism. First, they should promptly seek medical advice for the discovery and removal of possible sources of infection in their own bodies, which are acting as generating centres of auto-infection—such as infection of the tonsils, teeth, nasal sinuses, and intestinal tract. Wherever the source of such infection may be, it is absolutely of paramount importance that it should be dealt with promptly and thoroughly. No effort should be spared to check it at its very earliest stage. It has been well said that it is "perfectly futile to waste valuable time by palliative treatment, with anti-rheumatic or other drugs, local applications to the joints, and so forth, till the focus of infection has been eradicated." A stitch in time saves nine. Secondly, persons suffering from rheumatism should so order their lives as day by day to practise personal hygiene, and strict *moderation* and selection in food and drink, exercise, fresh air, and rest. Thirdly, they should be vigilant to avoid any predisposing conditions which conduce them to attacks of the disease, such as dampness and chill, unsuitable clothing, excessive use, misuse, or disuse of the stricken joints, or a clogged alimentary system. Neglect in the early stages of their condition is their supreme danger.

We have the exceptional advantage of the counsel of my distinguished colleagues, Lord Dawson of Penn, and the two Regius professors from Oxford and Cambridge, Sir Farquhar Buzzard and Sir Humphry Rolleston. We have also a brilliant group of recognised medical authorities, including those whom it is a pleasure to welcome to our shores. Further, it is particularly agreeable to confer with the physicians of this city, whose work and writings have contributed so largely to knowledge and practice. We cannot hope that our conference will furnish a complete answer to all our questionings and difficulties. But it should stimulate us in coöperation and endeavour, and it should guide us in the direction of a fuller and a more scientific study of what Milton and Dryden called the "bone-racking" disease. Whatever befall us in this enterprise we are fortunate in finding ourselves in the beautiful and ancient city of Bath, engaged, like the Romans and our own forefathers, in the rediscovery of its healing powers.

ROYAL COLLEGE OF PHYSICIANS OF LONDON:

THE HARVEY TERCENTENARY.

THE tercentenary celebration of the publication of the "De Motu Cordis" by William Harvey has been arranged for May 14th–18th, and the full programme will be found in THE LANCET of March 24th (p. 621).

Demonstrations at University College.

Fuller details are now available as to the demonstrations to be delivered at University College on Tuesday, May 15th, and Wednesday the 16th.

At 10.30 A.M., there will be an Exhibition of a Film of Harvey's Experiments, prepared by Sir Thomas Lewis and Dr. H. H. Dale.

At 11.30 A.M., the following demonstrations will be given:—

1. Prof. Lovatt Evans and Prof. E. B. Verney will give a demonstration of the Isolated Mammalian Heart-lung Preparation. The preparation to be shown is one devised by the late Prof. E. H. Starling for the purpose of studying the reactions of the mammalian heart to measurable changes in the conditions under which it is working. The heart and lungs are completely isolated from the rest of the animal, the normal peripheral circulation being replaced by a system of tubes representing its arterial, capillary, and venous components. The rate of inflow of blood into the right auricle, the temperature and composition of this blood as well as the peripheral resistance against which the left ventricle works can be varied and measured at will. Further, the effect of variations in any of these factors on the volume of the heart, on its rate of beating, and on the coronary flow may readily be studied.

The demonstration is designed primarily to show the nature of the reaction of the isolated heart to changes in the work which it is called upon to perform. These changes in work are here brought about by variations in the venous inflow or the peripheral resistance or in both. The effect of changes in the CO_2 tension in the gas ventilating the lungs, and of the addition of adrenalin to the circulating blood will also be shown.

2. Dr. H. H. Dale will demonstrate an apparatus for artificial circulation, designed by Dr. E. H. J. Schuster and himself, and consisting of two diaphragm-pumps, the throws of which are independently adjustable while the machine is in action. The two pumps are made to replace the two ventricles of the heart, so that the reactions of the blood-vessels of both major and minor circulations, and the resulting changes in resistance and in distribution of the blood in the system can be studied, free from the complications of compensatory or other changes in the action of the living heart. One pump carries out

ıe circulation through the lungs, the other through ıe whole, or any selected part of the systemic circulaon. This system, with its artificial heart and natural ːsistances, is in some sense a counterpart of the eart-lung preparation.

3. Sir Arthur Keith will demonstrate: (*a*) models ıade in 1906 to illustrate the movements of the ıman heart and to explain the negative wave in the ıgular pulse; (*b*) Sir James Mackenzie's original olygraph preserved in the Museum of the Royal ollege of Surgeons; and (*c*) will give a brief account f the anatomical examination of hearts observed and ːcorded by Sir James Mackenzie during his practice ı Burnley.

4. Sir Thomas Lewis will demonstrate, with the ılp of Dr. Ronald Grant and Dr. K. E. Harris, some ːactions of the human skin to stimulation, illustrating ɔntraction of the minute vessels and their reactions ɔ injury. This demonstration will be given on Vednesday only at 11.30 A.M.

5. Dr. B. W. S. Mackenzie will show some of ir James Mackenzie's original apparatus.

There are still some tickets available for thes◦ ːmonstrations, and medical practitioners who desire ɔ be present should apply for them at once to the ːgistrar, Royal College of Physicians of London, all Mall East, S.W. 1.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENT.)

Medical Research in India.

MEDICAL research and education are receiving much ɔnsideration in India at the present moment. A ɔmmittee presided over by Sir Walter Fletcher, ːcretary to the Medical Research Council, has just ispersed after three strenuous months' work. The romotion of medical research is officially under the ɔntrol and guidance of the Government of India. [uch research work, however, is carried out in rovincial institutions, and it was felt that the time ad come when some definite scheme for the promotion f research should be formed, outlining work to be ırried on by the Central Government and correlating ıe efforts now being made in existing provincial ıstitutions such as the Calcutta School of Tropical [edicine. The report of the committee is confidential nd may never be made public, but it is rumoured ıat the research department will be greatly ːengthened and augmented and that a new special ːntral research institute may be created. Sir Walter letcher's large experience was enlisted to help the overnment of India and the Indian Research und Association to organise means whereby medical ːsearch will be fostered and encouraged, for at present ıe valuable material available is not being used to ıe best advantage.

Sanitation in Bengal.

It has usually been held that the main stream of he Ganges used to flow southwards past Calcutta in he Hooghly and that a sudden diversion eastwards ɔme centuries ago carried away the Ganges flood ːater, bereft Central Bengal of its agricultural rosperity, and turned healthy tracts into what are ow the most malarious districts in the plains of ndia. Sir William Willcocks, the irrigation expert ho has been touring the delta of Bengal, in a ːcture to the British India Association, combats this iew; he holds that the main Ganges, by reason of s size, could never have been retained in the Iooghly and other channels, but that the present ːaterways in Western and Central Bengal are old anals made by "Bhagirath," the legendary chieftain ho conducted the Ganges to the ocean in order to ːrigate these tracts with Ganges flood water. The ːresent stagnant condition of the waterways is due ɔ centuries of neglect and the remedy lies in their leaning and re-excavation. They could again be ıed as water channels if a barrage were made across the Ganges at a suitable place, and the surrounding districts now desolate and malarious would become prosperous and healthy. Whether or not any practical scheme can be devised on these lines will have to be considered. On other lines Bengal is striving to improve health conditions. The province is adopting the "thana," covering an extent of about 80 square miles as the sanitary unit area. Each area is to be provided with at least one sanitary officer, either a sanitary inspector or a doctor. This officer will deal with preventive measures in his unit guided by the superior health staff of the district, who may when necessary concentrate all his forces in one part of the district. It is hoped that better results will ensue from this rearrangement.

Maternity and Child Welfare.

The more social aspects of medicine are gradually developing in India, though but slowly. Centuries of the feudal and family outlook have restricted the charitable impulses of the Indian to his own family or class. The community as a whole is still slow to believe in movements of a general nature such as maternity and child welfare and the protection of child life. Nevertheless, the maternity and child welfare movement since its inception by Lady Chelmsford has progressed considerably and the series of health and welfare exhibits held throughout India during the past cold weather have inspired workers to continue their efforts. The Child Marriage Bill and the Remarriage of Hindu Widows Bill have been again before the Central Legislative Assembly and show that the desire of the educated classes to break through the barriers of traditions and customs which oppose progress are becoming more and more capable of formulation and public discussion. In the Bill presented to the legislature it is proposed to raise the marriageable age of girls to 14 and of boys to 18.

Scavenging and Sewerage.

The "sweeper" or scavenger is one of the most valuable persons in India—only one or two of the largest cities have sewerage systems and even in them a large portion is unprovided with water-closets. So valuable is the sweeper that he is usually known by the honorific title of "Maharaj." It recalls the telegram during the war by an anxious sanitary commissioner in Mesopotamia to headquarters: "Will exchange medical officers at the rate of two for one sweeper." Both Madras and Calcutta have lately suffered from sweepers' strikes, and the sanitary (or insanitary) consequences are appalling. The recommendation of the Royal Commission of 1840 that excreta should be removed as quickly as possible from human habitation and preferably by means of water carriage is still unfulfilled even in large cities.

Improvement in Longevity Rate.

An interesting sidelight is shown on the improvement of health conditions in India by the report of the actuary of the Government of India on Indian insurance companies. In the statistical study of rates of premiums and the duration of assurance membership he concludes that there has been a distinct improvement in the longevity of the Indian population during the last 30 years.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Experiments on Children.

A PUBLIC sensation has been created here by a report of some experiments on the cure of rickets, published by Dr. Vollmer, of the Infants Hospital. In order to prove that a proprietary preparation of irradiated ergosterol was efficacious even under the most unfavourable general conditions, the investigators kept 20 infants in dark rooms and gave them a diet poor in vitamins but supplemented by this preparation. The report contained a somewhat unfortunate sentence in which Dr. Vollmer explained

that he had performed his experiments on 100 rats and 20 children. The result was that a medical member of the Reichstag, Dr. Moses, asked the Minister of the Interior whether he would take measures to stop experiments of this kind. He mentioned similar reports in the medical press of experiments on children suffering from tuberculosis and scarlet fever. The President of the Health Office replied for the Government that he was informed that the report meant that the children had not received a special antirachitic diet, nor any actinic rays whilst under observation, but apart from this they had been treated like other children. They had, moreover, been cured, and the supposition that they had been damaged by their stay in the hospital was therefore erroneous. Concerning the other facts mentioned by Dr. Moses, he had not yet made full investigation, but he was in a position to state that some of them did not even refer to Germany, but to foreign countries. The question has also been discussed in the Berlin Medical Chamber, and a committee has been elected to inquire whether Dr. Vollmer and his colleagues have contravened the rules of medical ethics.

Payment of Medical Deputies.

Medicine has but few representatives in the German Parliament, compared with the legal, the clerical, and other liberal professions; in the discussion of Bills which deeply affect its interests, it is represented quite inadequately. The reason is that the prolonged absence from home connected with membership of Parliament involves the loss of practice—a loss for which the salary of a deputy does not fully compensate. The Leipziger Verband has therefore decided to accumulate a Parliamentary fund by imposing an extra levy of M.20 (£1) on each member. The amount thus raised should be £40,000, which will be used to indemnify medical deputies for the loss of practice during their absence for Parliamentary work. No individual party is to be supported; the only condition is that deputies have to work for the profession —i.e., to vote against any Bill which may be prejudicial to its interest. A committee of four members of the Leipziger Verband will be entrusted to allot the money. The proposal has provoked a great deal of opposition and several local branches have protested, saying that the subscription to the Leipziger Verband is already too high, and that more cannot be contributed in the present sad condition of the profession. They also suggest that it is unconstitutional to bind Members of Parliament in their votes by giving them money on conditions.

Responsibilities of Pharmacists.

The provisions of the German law concerning the abuse of morphia and cocaine are somewhat severe. The Supreme Court at Leipzig recently gave judgment that a licensed chemist is liable to punishment if he dispenses a medical prescription although aware that the drug is destined not for medical purposes but for abuse. If he acts bona fide he is not held responsible, and the liability to punishment rests on the medical man who has prescribed the drug. This remarkable ruling requires that the chemist shall ascertain whether a prescription is made for curative purposes, in this way exercising a certain amount of supervision over the practice of individual medical men. The Chamber of Chemists, the official representative of the pharmaceutical profession, has energetically protested against the above judgment, declaring that the chemist cannot but execute every prescription signed by a duly qualified medical man and that an obligation to control the object of a prescription would be ultra vires. The Medical Chambers have not yet dealt with the matter although it has already been discussed in the medical press.

As diphtheria is spreading and is growing more malignant in Berlin, the municipal authorities have decided that children of from 1 to 6 years of age may be inoculated by the Schick method free of charge. There is, of course, no compulsion, but it is explained to the public that such inoculation may be expected to protect children against the disease for at least seven years.

Dr. Reyer lately read before the Berlin Society for Internal Medicine a paper on mediastinal pleurisy. He has seen 26 cases occurring as a sequel to influenza and sore-throat. The symptoms are severe attacks of cough and dyspnœa, with very few signs on auscultation. Percussion reveals a triangular patch of dullness in connexion with the normal heart dullness. Apart from this sign the diagnosis can be established by radiography. The prognosis is not a bad one.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Retirement of Prof. J. A. Lindsay.

Prof. J. A. Lindsay, Emeritus Professor of Medicine in the Queen's University of Belfast, has decided to retire from active practice and to reside in London. At a farewell dinner on April 24th many of his medical friends took the opportunity of expressing their high appreciation of his public services to the hospitals and university, of their indebtedness to him as a clinical teacher, and of their affection for him as a colleague.

Mr. T. S. Kirk, chairman of the medical staff of the Royal Victoria Hospital, in proposing Prof. Lindsay's health, paid a graceful tribute to his long and valued connexion with the hospital, first as a physician, and later as a chairman of the board of management. He had given his time ungrudgingly to further every interest of the institution. Prof. C. G. Lowry, chairman of the staff of the Belfast Maternity Hospital, associated himself with Mr. Kirk in this toast, stating that there were many criteria by which success in life could be judged, but if Prof. Lindsay valued renown as a clinical teacher, and the gratitude, affection, and respect of the many generations of medical students whom he had taught, he might be deemed to have achieved success in no ordinary measure. Prof. Lowry also paid tribute to his other services to the school, especially referring to the establishment of the Dental Faculty, and to his strenuous activities for the amalgamation of the Royal Victoria Hospital and the New Maternity Hospital, activities now crowned with success.

In his reply, Prof. Lindsay said that teaching, especially clinical teaching, had always been a joy to him, and he was never happier than when surrounded at the bedside by a group of eager and intelligent students. The late Sir William Osler once said that he wished his epitaph to be "he taught students in the wards." He himself would desire no better epitaph. After a brief glance at the progress of medical science in recent years, he sketched the progress of the Belfast Medical School within his own time. The old Royal Hospital had had 200 beds with a staff of 11, only one theatre, and two special departments. The present Royal Victoria Hospital had 436 beds, a staff (including the auxiliary staff) of 53, 9 theatres, and 6 special departments. These figures gave the measure of the progress of the times. It was about to add a maternity department and a department for paying patients. He had many regrets on leaving Belfast, but he felt that after 44 years of practice he might fairly take off his harness. He intended for the present to retain his seat on the Senate of their University, and would watch the further progress of the School with which he had been so long associated, and for which he predicted a bright and successful future.

Later in the evening speeches stressing the varied nature of Prof. Lindsay's active life in Belfast were made by Dr. J. S. Morrow, Prof. W. St. Clair Symmers, Prof. R. J. Johnstone, Prof. T. Sinclair, Sir John Campbell, Prof. A. Fullerton, Prof. W. W. D. Thomson, Dr. J. C. Rankin, Dr. Gardner Robb, and Sir Thomas Houston.

McKisack Memorial Fund.

A meeting of the subscribers to the McKisack Fund for a memorial to the late Dr. H. L. McKisack will be held at 10.30 A.M. on May 17th in the Royal Victoria Hospital, Belfast, immediately before the clinical meeting of the Ulster Branch of the B.M.A., to decide what form the memorial should take. It is hoped that intending subscribers will send their subscriptions to Mr. Edwin Hill, Northern Bank, Belfast, or Mr. Stanley Ferguson, Ulster Bank, Belfast, before this date in order that the subscription list may be finally closed.

MEDICINE AND THE LAW.

Coroner and Medical Practitioner.

AT a Greenwich inquest held at the end of April the coroner severely criticised a medical practitioner for having been present without consent at a post-mortem examination upon a man who died while entering an omnibus. The practitioner was apparently acting as consultant to the London General Omnibus Company which was interested in view of the prospect of civil proceedings in which it might be held liable. The coroner is reported by the *Daily Express* to have told the representative of the omnibus company that, if the company did things like that, he would shut them out of the court entirely; he was willing to give them every facility but he could not have such things done without his permission; "it is an unusual thing to do and is only worthy of a second- or third-rate insurance company." "The doctor," the coroner is reported to have added, "ought to know that he had no right to be present without the consent of the coroner." The gravamen of this medical practitioner's offence was presumably that, being a prospective expert witness and adviser employed by one of the parties to a prospective civil action, he acted improperly in being present at a post-mortem examination at which the other side was not similarly represented. It was presumably not suggested that a practitioner thus present without consent would abuse the occasion by attempting to fabricate or tamper with evidence; but he secured an advantage for his own side over the other side in having access to information and in having facilities which the other side was (for want of means or opportunity) denied.

At some stage of the inquest the coroner appears also to have said "I will see that the doctor is never present in my court on any future occasion." This, if correctly reported, raises interesting issues. There is doubt how far the proceedings at an inquest are entirely open to the public to attend. Particular circumstances may justify a private hearing, and a person whose behaviour is disorderly may certainly be excluded. The public, however, would probably be surprised to find that a coroner's court was so proprietary an institution that particular persons could be permanently black-listed. The omnibus company would naturally not tender any witness who was known to be unacceptable to the court, and the court has means of securing its own expert witnesses if expert evidence is deemed necessary; nevertheless it would be an unusual judicial utterance to announce that under no circumstances would a particular witness be allowed to give evidence at any inquest. A coroner, of course, can conduct his proceedings unaided. He summons the witnesses and, unless he otherwise permits, he examines them. He is a law unto himself except that the rejection of evidence is one of the grounds on which the High Court will interfere to quash the inquisition. But the present arrangement whereby parties are usually allowed to be legally represented and to offer evidence is worth preserving. The relatives of the deceased, for example, may often desire to tender medical evidence on issues such as insanity. It would be unfortunate if the more anachronistic features of the coroner's inquest were emphasised by too sweeping an assertion of them.

Effect of Illness upon Promise to Marry.

In a breach of promise action tried before Mr. Justice Acton last week, the defendant admitted his promise to marry the plaintiff but pleaded that his refusal to carry it out was justified by the fact that she had contracted tuberculosis. The plaintiff said the defendant knew quite well what her state of health was; she said she was now entirely recovered, and she suggested that the reason for the defendant's conduct was not her own health but another woman's attractions. The judge told the jury that there was no legal reason why a man should not be bound to marry a deaf-mute or a cripple provided that he knew of her affliction at the time he made his promise and that she agreed notwithstanding her disability. On the other hand, the man might be excused if the woman became thus afflicted after the date of the promise being made and before the date for its performance by marriage. The burden of proof would be upon the defendant to show that, after he gave his promise, there did supervene such a condition of bodily infirmity as would justify him in refusing to marry the plaintiff. Evidently the defendant failed to discharge this burden in the case recently tried, for the jury found for the plaintiff with £35 damages.

The law, it will be observed, concerns itself with the contractual, not with the eugenic, aspect. In the eighteenth century Lord Mansfield held that if, after a man had made a contract of marriage, the woman's character turned out to be different from what he had reason to think it, he could refuse to marry her without being liable to an action. As Lord Kenyon presently observed, whether the infirmity were bodily or mental, the reason was the same—it would be most mischievous to compel parties to marry who could never live happily together. But the text-books point out that a man cannot count on getting out of his promise to marry by disparaging himself—though the attempt is not uncommon. Some 70 years ago a man pleaded in a breach of promise action that, since his promise to marry, his lungs had become seriously affected, so that he was totally unfit for marriage. The judges heartlessly took the view that perhaps the lady might like to be his widow, and thus his plea failed.

False Description as Bachelor of Science.

A prosecution in Shropshire last week illustrated the ease with which unqualified persons can assert the possession of academic degrees. A school-teacher, describing himself as a Bachelor of Science of London University, was appointed to a post at a provincial grammar school in January, 1921. He proved to be an excellent teacher of mathematics and his degree was never questioned until last October, when the headmaster had to fill in the qualifications and service of his staff in connexion with the pension scheme for the information of the Board of Education. He found the claim to the degree to be unfounded, and he suspended the teacher, whom the school governors subsequently allowed to resign. The teacher has now been charged with obtaining money by false pretences from the governors of the school by falsely describing himself as Bachelor of Science of London. The magistrates took a lenient view and bound the accused over, subject to his paying £25 as compensation and £30 costs. The bench remarked, in conclusion, that greater care should have been taken in making the appointment. This presumably means that, if a university graduate applies for a post, his degrees should be strictly verified from the university calendar.

THE DEVONSHIRE AMBULANCE SERVICE. — The annual report of the Devon County Centre of the St. John Ambulance Association states that during the past year many new ambulance and nursing divisions were formed. During that period the three Plymouth stations alone made over 25,000 attendances in the case of accidents and fires, and the conveyance of crippled children and hospital out-patients. These figures are an increase of 800 per cent. over those of 1921–22.

Public Health Services.

A MEDICAL BENEFIT INQUIRY.

REMOVAL OF NAME FROM MEDICAL LIST: A QUESTION OF COSTS.

UPON a recent inquiry under Part VI. of the National Health Insurance Medical Benefit Regulations, the Minister of Health, after deciding to remove a doctor's name from the medical lists of the insurance committees concerned, made no direction as to costs. In this respect he followed the recommendation of the tribunal which, though of opinion that the complainant insurance committee was justified in preferring its representation against the medical practitioner, commented upon the fact that certain charges had not been substantiated. No proof had been adduced of three of the original charges, a fourth was not proved in substance, a fifth broke down for want of evidence, and a sixth was so extensively amended at the hearing as to amount to an entirely new charge. The tribunal found it impossible to ascertain how far the respondent practitioner had been put to expense in preparing to meet these particular allegations. The report upon the case expressly emphasises the desirability that representations under Part VI. should not be made to the Minister in such a form that at the hearing, apart from failure of substantiation upon actual evidence submitted, it becomes necessary to abandon charges without seeking to prove them. From this criticism the tribunal expressly excludes a case where failure of proof results from some unavoidable cause such as the death or other disability of proposed witnesses. The Minister's adoption of the tribunal's recommendation will be generally approved, but it would seem that, if the expense of preparing to rebut unproved charges could be ascertained, the doctor would be entitled to his costs in respect of those items in any event, whatever the general result of the investigation.

These cases turn upon their own special facts and are seldom of general interest. One charge in the recent inquiry may perhaps be mentioned. It was said that the respondent doctor, not being registered as a dental surgeon or being on the dental panel for insured persons, held himself out as a dental surgeon and acted as such to insured persons, and, when so acting, gave a full anæsthetic and charged both fees as if a doctor was also present, though in fact the respondent's wife was the only other person present. It appeared that the respondent, while previously employed as assistant medical officer of a certain Amalgamated Friendly Societies' Medical Association, had been allowed to do dental work. At the time of the dental operations mentioned in the charge, dental benefit had been recognised as an additional health insurance benefit by the approved societies of which the particular patients were members. He filled in dental letters with particulars of treatment, including a guinea for anæsthetist's fee, and he stamped his name and address on the letter with the description "dental surgeon." His defence was that, being a qualified medical practitioner, he could rightfully describe himself to insured persons as a dental surgeon; he further said he had never been informed that the effect of schemes for additional dental benefit would be to change the nature of his dental practice and to put him under restriction—e.g., as to charging for an anæsthetic in the absence of an assistant anæsthetist. The tribunal felt unable to accept the explanation of his alleged ignorance since the dental letters were clearly applicable only in the case of registered dentists. While no specific complaint of the actual treatment was received, the tribunal thought that both the patients and the societies were in fact deceived as to his right to receive reward for his services; the report regards his conduct in this matter as open to criticism and censure.

ULTRA-VIOLET LIGHT TREATMENT AT PUBLIC BATHS

In connexion with the proposal of the Manchester Corporation Baths Committee to instal apparatus for treatment by ultra-violet light at a cost of £400 at the Whitworth and Victoria baths, deputations from the committee visited Leeds, Bradford, and Stockport where such apparatus is installed in the public baths. They were informed that the innovation has proved a great success, the returns of attendances and the income from this source being as follows:—Leeds, from August, 1927, to February, 1928: total, 20,595; £1716 9*s.*; Bradford, from April 25th, 1927, to March 17th, 1928: total, 35,151, £2205 9*s.* 3*d.*; Stockport, from Feb. 15th, 1928, to March 24th, 1928: total 1503, £196 9*s.* 6*d.* There was no medical supervision whilst the treatment was given; permission from the Ministry of Health for the installation of the various appliances had not been asked. The medical officers of health of the three towns visited had raised no objections, and no complaint had been received of ill effects from the administration of the treatment.

The medical officer of health for Manchester, commenting on the visit, saw no reason to alter the views expressed by him two months ago, and quoted in THE LANCET of Feb. 25th last (p. 418). He does not approve of treatment by ultra-violet light in the absence of medical supervision either of the people treated or of the clinic itself; he has evidence that specialists in Manchester are constantly dealing with people who have suffered from undue exposure to ultra-violet rays, and serious conditions have been set up in these individuals as a result of unskilled treatment by this means. The only type of scheme which he can formally and personally approve is one which provides for the medical examination of all persons who are to be treated and the medical supervision of such persons at periods to be determined during the course of their treatment. The medical man or woman appointed for this purpose would possess knowledge and experience in the use of ultra-violet rays. No person should be admitted to the clinic unless passed by the doctor, and only such treatment should be given to any person as has been specially prescribed for him. In view of the strong opinion expressed by the medical officer of health the finance committee has recommended that the scheme proposed by the Baths Committee, which does not conform to these conditions, be not approved.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 28TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 376 (last week 326); scarlet fever, 1675; diphtheria 1055; enteric fever, 65; pneumonia, 1122; puerperal fever, 51; puerperal pyrexia, 115; cerebro-spinal fever, 9; acute poliomyelitis, 10; acute polio-encephalitis, 4; encephalitis lethargica, 37; continued fever, 2; dysentery, 24; ophthalmia neonatorum 123. No case of cholera, plague, or typhus fever was notified during the week.

Cases of small-pox were notified from the following 21 counties: London, 3; Chester, 2; Derby, 1; Durham, 92; Essex, 1; Gloucester, 1; Lancaster, 4; Leicester, 1; Lincoln, Parts of Kesteven, 4, Parts of Lindsey, 5; Norfolk, 4; Northumberland, 12; Nottingham, 15; Soke of Peterborough, 7; Stafford, 5; Surrey, 5; Warwick, 5; Yorks, North Riding 8, West Riding 10; Glamorgan, 18; Monmouth, 34.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 1st–2nd was as follows: Small-pox, 21 under treatment, 8 under observation; scarlet fever, 1588; diphtheria, 2200; enteric fever, 34; measles, 1379; whooping-cough, 150; puerperal fever, 18 (plus 13 babies); encephalitis lethargica, 6; "other diseases," 21. At St. Margaret's Hospital there were 13 cases of marasmus, and 11 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 (0) deaths from small-pox, 1 (0) from enteric fever, 117 (75) from measles, 5 (0)

om scarlet fever, 50 (13) from whooping-cough, (12) from diphtheria, 39 (6) from diphtheria and teritis under two years, and 80 (10) from influenza. ne figures in parentheses are those for London elf.

The two deaths provisionally classified to small-pox were signed to Gateshead. The fatal case of enteric fever tside London occurred at Norwich. Of the 42 fatal cases measles outside London, 4 were reported from Tottenham d 3 each from Liverpool and Salford; while the figures Edinburgh, Glasgow, and Dublin for the same week re 7, 3, and 3. Of the 37 fatal cases of whooping-cough tside London, 7 were reported from Liverpool, 4 from rdiff, and 3 each from Birmingham and Bradford.

e number of stillbirths registered during the week s 292 in the great towns, including 60 in London.

Correspondence.

"Audi alteram partem."

THE AUSCULTATORY GAP.

To the Editor of THE LANCET.

SIR,—Your annotation (p. 919) prompts me to w attention to a potential source of error in od pressure records to which I can find no reference standard literature. It is quite essential that the ssure in the cuff should be released slowly and h certain types of release valve this is a matter of ne difficulty. Even with the best type of valve ne inadvertence or distraction during the taking of ecord may result in a sudden drop of 20 mm. in ssure in the cuff. That sudden fall, though it y not bring the pressure down to the systolic level, ults in a sound heard by the stethoscope below cuff. It is an isolated sound, and though the ernal pressure be maintained at the level to which as thus fallen the sound is not repeated.

have detected this sound often enough to make curious as to its explanation. It is heard, under circumstances noted, before but not long before systolic pressure level has been reached and it is ilar in quality to the first sounds heard thereafter. occurs in the absence of extrasystole or of rnation of the pulse, and a sudden or at least id fall in the external pressure appears to be the ef factor in its production. An external pressure icient to obliterate the pulse wave in an artery s not necessarily inhibit all power of vibratory onse in the vessel wall and I can only think that sound is an expression of recoil. I am too little physicist to be clear in the matter.

I am, Sir, yours faithfully,

undee, May 4th, 1928. JAMES M. STALKER, M.B.

To the Editor of THE LANCET.

IR,—The suggestion in your very interesting otation that the "rapid" vibrations in the arterial l are responsible for any sound is, I venture to k, open to doubt, because unless those vibrations as many as 60 to 100 per second they are not likely produce any sound at all, much less the sound ciated with the estimation of the blood pressure. suggestion that eddies also play a part is open to ally strong objection, first of all because there is evidence whatever of such an eddy, and secondly ause no moving fluid, unless its surface be exposed air, can produce any sort of a sound.

I am, Sir, yours faithfully,

vansea, May 7th, 1928. G. ARBOUR STEPHENS.

To the Editor of THE LANCET.

IR,—May I draw attention to the theory suggested J. Barbier, in his monograph on "La Méthode cultatoire," to explain the mechanism of this nomenon. Barbier regards the gap as the acoustic equivalent of the anacrotic pulse and explains its occurrence by reference to the typical tracing of such a pulse. He points out that in the ascending limb of such a pulse curve there are three successive zones. Of these the first and third appear as more or less vertical lines, while the second or middle zone, which represents the anacrotic notch, appears as a horizontal line or plateau. If the armlet of a sphygmomanometer be applied and the pressure be raised to a point below the systolic level, the subjacent artery remains collapsed except when forced intermittently to open by the succession of pulse waves. When the armlet pressure is equivalent to a point either in the first or in the second zone of the pulse curve, the arterial door opens with a jerk, in response to a rapidly rising pressure, a percussing quality is imparted to the movement of the arterial wall and a sound is produced. On the other hand, when the armlet pressure is equivalent to a point in the second zone, the region of the anacrotic plateau, the arterial door is forced by a very slowly rising pressure and, therefore, it opens without clatter and no arterial sound is produced.

This explanation is so reasonable that we might accept it at any rate until a better one is forthcoming.

I am, Sir, yours faithfully,

Torquay, May 6th, 1928. PAUL C. GIBSON.

"THE GRATEFUL REPUBLIC."

To the Editor of THE LANCET.

SIR,—May I recall attention to the subject of invaliding from the Navy for tuberculosis, broached by an anonymous correspondent in your issue of April 14th? This subject was much discussed in the House of Commons in March last, when no one seemed sure how much tuberculosis there was in the Navy, and whether more or less than in the other Services or in civil life. The facts are uncertain, as the age distributions are unknown, but it may be well to state that in the last four years for which we have full figures, 1922–25, there averaged, from tuberculosis, per 1000, in the Navy (92,000 men), 2·0 invalids, and 0·3 deaths; in the Army (196,000 men), 1·2 invalids and 0·18 deaths; in the Air Force (30,000 men), 1·6 invalids and 0·14 deaths. Of the men in the Navy, 85 per cent.[1] are under 35, so it will be worth while to mention that in these same years, 1922–25, there averaged in England and Wales 6,000,000 male civilians, aged 15–35, of whom 1·15 per 1000 died of respiratory tuberculosis; and the total tuberculosis death-rate was 1·32. The annual loss or wastage from tuberculosis comes out, for the Army at 1·4, for the Navy at 2·3, for the Air Force at 1·7 per 1000. The simultaneous civil death-rate was 1·32. The average annual loss of men from tubercle in the three Services together in the four years was 476 invalided and 68 dead, 544 in all. Médecin-en-chef (Surgeon-Captain) Cazamian[2] tells us that there are fewer cases of tuberculosis in the British than in the French or the United States navies: Rho[3] says that from 1893–1920, only once, in 1906, had the Italian Navy fewer cases than the Army.

But what chiefly exercised the House of Commons was the question, what became of the 220 the Navy invalided in 1925 and how many of them got pensions, and how many should. It appeared that only 3 per cent. were pensioned in 1923–24–25, but more recently 10 per cent. Men only get pensions if their disease is "attributable to the Service," the decision being made "by the medical officers at the Board of Admiralty," said the Financial Secretary,[4] though he allowed, later, that it might be fair to say that the rules by which these matters were judged were too severe, and that the doctors were not given sufficient latitude. And that seems not unlikely,

[1] Journal of the Royal Naval Medical Service, January, 1927, p. 26.
[2] Arch. de Médicine Militaires, 1927, lxxxxvii., 570.
[3] Military Surgeon, July, 1925, p. 1.
[4] Hansard, March 7th, 1928, col. 1177.

for the First Lord wrote [5]: "Before a disease can be accepted as attributable to the Service it must be shown to have developed out of unusual conditions." But phosphorus necrosis of the jaw surely developed out of what were thought to be usual conditions; was it not then attributable to yellow phosphorus match-making? But that will fail to be considered by the Joint Committee sitting now and examining the question of attributability, and one hopes the, also recently announced, special Medical Consultative Board on hygienic conditions may lessen the number of cases.

When I was a junior officer we often heard, "They do these things better in France," not so often perhaps now, yet it may be well to inquire what they do there. In the *Archives de Médecine Militaires* (the French *R.A.M.C. Journal*) for 1924, lxxx., 290, is a paper on disability pensions by Médecin Major R. L. J. Boyé, who declares that before the war the French citizen discharged his military service mostly at his own risk, but that now that risk is carried for him by the public, by the Law of March 31st, 1919. Its Article 1 begins: "The Republic, grateful to those who have secured the safety of the fatherland, proclaims and determines they have a right to pension," after August 2nd, 1914. Article 3 states that rights to pension arise from injuries certified before the man returns to his home, or from diseases caused or aggravated by the toils, dangers, or accidents of service. Article 5: all diseases in a soldier or sailor, either during service or during the six months following his discharge, are presumed, unless there be proof to the contrary, to have been contracted in or aggravated by the toils, dangers, or accidents of the service. The amending law of 1923 lays down that the "presumption" above comes into force the day the recruit is passed "fit for service" (after a detailed examination as searching and documented as for life insurance). Up to that time, if invalided, he is only pensioned under the old law, his disease must be proved due to the Service. Dr. Boyé suggests that a man, getting scarlet fever after arrival, and having to be invalided with chronic nephritis, would probably be pensioned under the old law.

"The Republic, grateful to those who have secured the safety of the Fatherland . . ." is a fine gesture, too, to the men; has England had less cause for gratitude than France, will she have less in future to the men who are not conscripted, but volunteer to serve for her protection?

If the Admiralty does not support these consumptive invalids, I suppose the guardians must. So, in any case, the public has to pay. But the period of transfer, the interim of uncertain rearrangement, is very hard on a consumptive patient who has to learn the completely new hierarchy that will by and by take him over when he has become known to them. Why should his old masters, if grateful, let their responsibility for him devolve on others? Feeling themselves the expense tuberculosis entails, they might the more busily search to end it.

I am, Sir, yours faithfully,

W. E. HOME,
Fleet Surgeon.

Naval and Military Club, W., May 1st.

[5] Hansard loc. cit., col. 1174.

SUBCUTANEOUS EMPHYSEMA DURING PARTURITION.

To the Editor of THE LANCET.

SIR,—I was interested to see in your issue of April 14th (p. 757) the report by Dr. Salmond of a case of surgical emphysema during parturition. I never saw or heard of such a complication during six months' clinical clerking at the Rotunda Hospital, but I had a similar case about six years ago in Valparaiso, which I did not report. It was the first confinement of a frail woman, the first stage of labour was prolonged, the membranes having ruptured early. During the expulsive stage the head came down to the perineum, the pains being strong and prolonged with short intervals. After the second stage had lasted two hours I applied forceps as the patient was beginning to show signs of exhaustion.

On my first visit next day she was very well, but remarked: "Doctor, I am all swollen with a curious tender feeling in the skin." There was typical emphysema reaching from the nipples under the breasts upwards over the clavicles to the neck, mastoid region, over the mandible and lower half of the face, upper shoulders and neck at the back, with no pain, but some tenderness on pressure. No treatment was given. The condition lasted about a week and the puerperium was otherwise normal.

I do not think that the condition can be explained satisfactorily merely on the assumption of the rupture of one or more air-vesicles into the mediastinum or the subcutaneous tissues, because if that were so once the rupture is produced, all the air forced out during each successive effort at short intervals and under very great pressure would soon cause some kind of distress or show itself as a localised swelling at some spot before giving rise to the typical sensation of surgical emphysema.

There must be some other explanation of a complication which leaves no after-effects. I have attended this same patient in three subsequent confinements without forceps, the last one a breech presentation without recurrence of the complication.

I am, Sir, yours faithfully,

S. M. WELLS.

Queensborough-terrace, Hyde Park, W., April 23rd, 1928.

ANATOMICAL NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—The Basle Nomina Anatomica (B.N.A.), containing some 4500 names, was promulgated, chiefly by the German and Austrians in 1895. After 33 years the Anatomical Society of Great Britain and Ireland, taking exception to 56 of these terms, has, with a view to their discussion at a meeting, just issued them to its members in a list in three columns, of which the first is headed "B.N.A. term," the second "Suggested Substitute or Translation into English," and the third "Reasons." Has the B.N.A., then, as a whole been accepted in England by anatomists and is it being used in medicine and surgery and their allied sciences? has all thought been abandoned of a truly international nomenclature? or even of an English nomenclature leading on towards an international? And what about France? For each nation to retain its own nomenclature or to adopt substitutes, even if only for those terms which it dislikes, is everlasting Babel.

The present moment is critical. Instead of pursuing our own bêtes-noires and crushing them out of existence let us find principles—not such that they all must determine the nature of each structure, which is impossible, but such that one or more will give every structure a name so reasonable and so convenient as ultimately to win unanimous approval even when that involves compromise. In a crowded afternoon to discuss for a few minutes 56 terms out of 4500 is to tickle Niagara with a straw. So serious and so subtle are the pitfalls that even the list just issued proposes for one correct and convenient B.N.A. term a substitute no more convenient and anatomically inaccurate. General principles readily solve the difficulty, and provide a term as accurate as the B.N.A., more convenient than either, and comprising both.

Would it be possible, then, for the Anatomical Society to meet eminent medical and surgical practitioners, specialists and otherwise, not to discuss particular terms, but to seek means of securing principles on which to base such a nomenclature as would appeal to all English-speaking teachers, students and practitioners, and also mutatis mutandis to all teachers, students, and practitioners speaking other tongues?—I am, Sir, yours faithfully,

WM. CUTHBERT MORTON,
Hon. Demonstrator in Anatomy,
Leeds University.

May 7th, 1928.

LIVER IN PERNICIOUS ANÆMIA.

To the Editor of THE LANCET.

SIR,—As the disease appears to have belied the readful title its name ceases to be descriptive, and only for this reason, we should revert to its former esignation—Addison's anæmia.

Dr. Knyvett Gordon's conception of the disease THE LANCET, May 5th)—"the persistence of nbryonic *erythropoiesis* in the liver"—cannot possibly e upheld. For some unknown reason attention has een focused almost entirely on the hæmoglobini- rous cells and their precursors; but dramatic as the anges in these cells and the appearance of the egaloblast are, equally striking features are present the other descendants of the hæmocytoblast. The normal myelocytes and eosinophils in the blood ream, the polymorphs of normal size with hyper- gmented nuclei so often encountered in films and in arrow puncture, the right-handed polynuclear unt, the frequent presence of macropolycytes of ype I., and in the terminal stages, of the mega- ryocyte type, show that the granulocyte series is so profoundly affected. Many of the cells in ldison's anæmia have no prototype in the human, ammalian, or avian embryo. And why limit the thological process to the liver when the mesen- yme descendants in other parts are abnormal?

A view that has some confirmation, both experi- entally and clinically, may be briefly mentioned. he hæmocytoblast is abnormal from birth, but rforms its functions sufficiently well for the main- nance of health until abiotrophy occurs. Chemically normal erythrocytes are then formed, and these e readily phagocyted by the cells of the reticulo- dothelial system in the spleen, liver, hæmo-lymph nds, and in the marrow itself. The alteration in e environment of the hæmocytoblast produced by is intracellular hæmolysis still further embarrasses e failing parent and mesenchyme descendants uated in places other than the marrow attempt to vert to their embryonic function. On account of the ered environment true metaplasia cannot take ce and the result is an abnormal reversion. This te continues until either the reticulo-endothelial stem becomes refractory and phagocytosis ceases, dietetic alteration restores some essential constituent the plasma. A remission occurs, followed by a apse when the environmental state of the abnormal mocytoblast again becomes unfavourable.

This view includes both the congenital and the chemical hypotheses, so interlinked as to be eparable, and however tempted we are to ascribe e disease to the one or the other, both factors, in the sent state of our knowledge, must be considered ether. The abnormal hæmocytoblast cannot be arated from its environment, nor can we say that cell itself is not solely responsible for that vironment. I am, Sir, yours faithfully,

Vigan, May 5th, 1928. W. E. COOKE.

THE MEINICKE REACTION.

To the Editor of THE LANCET.

SIR,—This micro-reaction for determining the philitic or non-syphilitic character of serum was lt with by Dr. David Prentice, in your issue of rch 10th (p. 493), who gave a full account of the ails of the method as well as evidence of its great lity. The inference to be drawn from his account that he, like Kovács, whom he quotes, would be isfied with the reaction as an exclusive routine test cept in certain instances for which the Bordet- assermann method cannot as yet be discarded. rther evidence to this effect is available from the rk of Jaubert and Gory,[1] who examined 610 samples of syphilitic serum and 1490 samples of serum from other patients in the Hôpital Broussais, using a tolu antigen prepared by the method of Mutermilch of the Pasteur Institute. The sensibility of this antigen is as great as that of the German product. It was impossible to establish a comparison between the sensibilities of the Bauer-Hecht reaction and that of Meinicke for the different forms and manifestations of syphilis. The B.H. reaction was tested, with precise determinations of the hæmolytic index, in 2100 samples. The greatest importance is attached to the technique of preparing the emulsion, which is much the same as that given by Dr. Prentice, but heat (*à chaud*) is recommended. The stability of the emulsion of tolu antigen is shown by its remaining clear for more than a year. In 91 per cent. of all cases the Meinicke reaction permitted definite classification of the serum as positive or negative. Dr. Prentice found agreement between the Meinicke and Wassermann reactions in 93·3 per cent. of cases. The authors consider the reaction to be of great value in the battle with syphilis, and it is so simple that it may be employed by everybody and everywhere. Practitioners are advised to exact its use in laboratories to which they look for diagnosis, or at least to insist on the simultaneous use of different methods.

I am, Sir, yours faithfully,

University College, Cork, May 3rd, 1928. D. T. BARRY.

[1] Compt. Rend. Soc. de Biol., 1928, xcvii., 1455–6; Physiological Abstracts, 1928, xiii., 62.

HAS THE CAMPAIGN AGAINST VENEREAL DISEASE BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—All will agree with Mr. Johnston Abraham that more beds are needed for the treatment of gonorrhœal cases in women, especially those who work in an out-patient clinic. Our experience in the female V.D. department of the Royal Free Hospital confirms the opinions of Dr. Cumberbatch and Dr. Robinson, that the treatment of chronic gonorrhœa in women by cervical or urethral diathermy is, in many cases, the method of choice, but we differ from them as to the speed with which these cases can be rendered non-infectious. We find that cases which yield satisfactory results after only three to six diathermy applications include only (1) non-gonococcal cases of chronic urethritis and cervicitis, and (2) cases which, though at one time positive, have been subjected to a course of treatment other than diathermy and no longer show bacteriological signs of infection. We can quote six cases of gonococcal urethritis from our numbers, five of which showed pus and gonococci in the films after 4, 6, 7, 9, and 15 applications of diathermy respectively, while the remaining case showed pus in the urethral films after 24 applications. Several cases appeared to be free from infection at the end of six applications but, in the course of a few weeks, pus was again found in the films. These cases were nearly all either single girls or married women living apart from their husbands, where presumably there was no reinfection.

In our opinion diathermy applications are certainly the most adequate means of bringing a chronic gonococcal infection to an end, but the time taken up by a course of such tedious length makes it impracticable on a large scale in an out-patient clinic.

I am, Sir, yours faithfully,

ELIZABETH GOURLAY,
Assistant to the Medical Officer in Charge, Female V.D. Department, Royal Free Hospital.

May 8th, 1928.

To the Editor of THE LANCET.

SIR,—Dr. Tytler Burke's letter calls for a reply. He is right in inferring that I suggest the operation of vasotomy should be done in all cases of acute, chronic, anterior and posterior gonorrhœa. I have so far found no difficulty in doing so in these cases. As the rationale of this treatment is based on the attempt to disinfect the tract from beyond the limit of extension

of infection it is obvious that it should be applied in every instance. In a case of acute gonococcal anterior urethritis my practice is to inject one vas at once, and if the discharge has not disappeared at the end of a week to inject the other vas. I can strongly recommend this treatment to Dr. Burke and will be very interested to hear of his experience which will be valuable. With regard to detention in bed my remark did not apply to cases where constitutional symptoms necessitate rest in bed. But in the absence of these I find no objection to allowing the patient up after 24 hours with a collodion dressing.

I am, Sir, yours faithfully,

Harley-street, W., May 4th, 1928. J. F. PEART.

To the Editor of THE LANCET.

SIR,—Dr. Peart's claim that "injection of the vas" has in his hands been "absolutely reliable in dealing with every stage" of gonorrhœa astonished me, in view of my impression that such treatment had been largely given up, even for chronic vesiculitis; as wide investigation during the last five years had shown that it was neither free from risk of damage to the vas nor was very reliable as a cure, although of undoubted value in some cases. It is difficult to understand the raison d'être of treatment of any other gonococcal condition than vesiculitis by way of the vas, and, personally, I should consider vasotomy and injection of vesicles as unjustifiable and contra-indicated in the absence of symptoms suggesting gonococcal infection of the vesicle.

It appears to be unreasonable to claim that urethral folliculitis, probably the commonest complication of gonococcal urethritis, can be influenced in any way by injection of the vas with any antiseptic. It would be interesting to know the number and nature of the cases on which Dr. Peart founds his dogmatic statement in favour of treatment per vasa rather than per urethram in "every stage of the disease." I venture to suggest that intravenous injection of sulfarsenol as recommended by Dr. Carminow Doble, and diathermy of the prostate per rectum as introduced by Dr. Cumberbatch, are more likely to be of value in the treatment of epididymitis and prostatitis, in additional to the usual routine treatments of these conditions, than any treatment per vasa.

I am, Sir, yours faithfully,

H. WANSEY BAYLY.

Harley-street, W., May 7th, 1928.

MULTIPLE DENTAL EXTRACTIONS.

To the Editor of THE LANCET.

SIR,—It is not easy to decide between the "all at once" and "a few at a time" arguments of Dr. Hilliard and Mr. Johnson. In nine cases out of ten the patient's mouth will probably make a good recovery whichever method is adopted. In the tenth case, where there has been systemic infection from the sockets and the resistance is dangerously low, it is not obvious that multiple extractions will have worse results than the extraction of three or four teeth, three or four times repeated. On the whole, my impression is that the latter procedure has been less well borne. But has not the time come to abandon these haphazard and speculative methods? We are now able to have the blood tested, and if the non-specific bactericidal power is found to be dangerously low, it is possible to increase it substantially by ultra-violet body-baths or by really effective irradiation, producing erythema, in the mouth itself—the former method being, in my judgment, preferable from every point of view. This may, or may not, involve the postponement of the operation for as much as a week, but it is certainly calculated to promote rapid and painless healing and to prevent residual sepsis—a frequent and formidable sequel.

I am, Sir, yours faithfully,

London, W., May 8th, 1928. F. TALBOT.

DOCTORS AND THE NURSING HOMES REGISTRATION ACT, 1927.

To the Editor of THE LANCET.

SIR,—It has taken a quarter of a century to effec the legal registration of nursing homes, but those wh first advocated this legislation—yourself among other —never anticipated the inclusion of doctors' house and still less the exclusion of Christian Science homes It may be of interest to recall that the first publi discussion on the subject took place at the congres of the Royal Sanitary Institute at Bradford in 1903 and was quickly followed by a leading article an correspondence in your columns.

I am, Sir, yours faithfully,

E. M. HOMERSHAM,

Devonshire House, King Henry's-road, N.W., May 5th, 1928. Assoc. R.S.I.

MEDICAL AUTOGRAPHS.

To the Editor of THE LANCET.

SIR,—I am endeavouring to compile a list o medical societies or institutions that possess collection of medical autographs, my purpose bein to encourage this method of perpetuating the memor of those pioneers of medicine who have for the mos part passed beyond the veil, but whose names live a the benefactors of mankind. The extensive collectio that are possessed by the Royal College of Physician of London, the Royal College of Surgeons of Englan the Royal Society of Medicine, and that more recentl acquired by the British Medical Association a familiar to me, but there must be many othe professional societies both at home and abroad tha have recognised the historical interest of such litera memorials, especially when associated with an albu of portraits. I shall be grateful if such societies wi furnish me with some particulars of any collectio they possess.—I am, Sir, yours faithfully,

JAMIESON B. HURRY.

"Hinton Firs," 15, Gervis-road, Bournemouth.

VISIT OF DR. SCHWEITZER TO ENGLAND.—D Albert Schweitzer, who is on furlough from his hospit work at Lambarene in Central Africa, will be giving a seri of organ recitals and lectures during the month he is spendi in England. On Wednesday, May 16th, at 7.30, he w give a lantern lecture on his work, at Friends Hous Euston-road, London.

DONATIONS AND BEQUESTS.—The late Mr. Willia Fletcher Moore Patten, of Hove, left, in addition to oth bequests, £2000 to the Sussex County Hospital and £10 to the Royal Alexandra Hospital for Children, as well £200 each to the Victoria Jubilee Annuity Fund and t Molyneux Asylum for the Female Blind, Dublin. On t death of his aunt £2000 will go to the Alton Childre Hospital and College and £1000 to Reedham Orphanage. By the will of Miss Emma Tedbury, of Exeter, the followi bequests have been made: £300 to the Cottage Hospit Budleigh Salterton; £100 each to the West of England E Infirmary, the West of England Blind Institution, t Royal West of England Deaf and Dumb Institution; a the residue of the property to the Royal Devon and Exet Hospital.—After the fulfilment of certain bequests M William Thomas Higginbottom, of Blackburn Pa Didsbury, left £1000 each to Manchester Royal Infirma Dr. Barnardo's Homes, Ancoats Hospital, and Ardwick a Ancoats Dispensary, and £500 to the Christie (Cance Hospital, Manchester.—Among other large bequests the la Alderman F. C. Clayton, of Edgbaston, left £3000 to Quee Hospital, Birmingham, with the request that this sum shou be used for a Queen's Hospital Convalescent Fund, for t benefit of in-patients of that hospital by the purchase tickets for their admission to the Sanatorium at Blackwe or otherwise in procuring for them change of air and res £1000 to the Queen's Hospital, Birmingham, for gene purposes; and some £353 per annum from ground rents the University of Birmingham. Under the same will t University of Leeds will receive £2000 in stocks to found Richard Reynolds scholarship in chemistry or pharmacy.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

NATIONAL HEALTH INSURANCE BILL.

Payment of Insured Persons While in Hospital.

WHEN the Committee resumed its sittings on April 26th, Sir KINGSLEY WOOD (Parliamentary Secretary to the nistry of Health) referred to the promise given by Mr. namberlain at the previous sitting to reconsider his attitude regard to the payment of sickness and disablement nefit while insured persons were in a poor-law institution, spital, or other institution. His right hon. friend cognised, he said, that there might be cases where a lump m should be given, and if Mr. Broad would withdraw his nendment he (Sir Kingsley Wood) would be prepared to ove an amendment providing that the matter should be t to the discretion of the society or committee.

Dr. VERNON DAVIES: Does this mean up to the maximum £50?

Sir KINGSLEY WOOD: Yes.

Mr. BROAD'S amendment was withdrawn and Sir KINGSLEY OOD'S proposed amendment was agreed to.

Clause 3: Administration of Medical Benefit.

On Clause 3 (which amends Section 24 of the principal t as to the administration of medical benefit),

Mr. JOHN said he wished to oppose the clause on the ound that it proposed to refuse recognition or approval medical institutions that have been approved for the t 13 or 15 years, and also prevented similar institutions m being recognised or approved in future. He was a loss to understand why this clause had been inserted, cause the medical schemes or institutions which were existence met the desire for a greater scope in medical eatment or benefit than could be given by the individual nel practitioner. The Act itself only gave the insured rson a guarantee of one doctor, who was not called upon have more skill than could be reasonably expected. The edical institutions to which he referred coördinated medical eatment and benefit in such a way that the members re entitled to the services of a number of doctors in spect of both medical and surgical treatment. They re also entitled to electric treatment, massage, light eatment, and laboratory advice. If it was intended to use recognition to these institutions, a large number of em would be placed in an awkward position.

Sir KINGSLEY WOOD said that although he did not wish condemn what had been done under the guise of making dividual arrangements, unfortunately a number of insti-tions had purported to make arrangements to escape the dinary normal arrangements of medical benefit. When e Act was passed it was never intended that a number of ople should be able to band themselves together, and by me sort of device, put themselves in exactly the same sition as those existing institutions which were covered Section 24 of the principal Act. The result was that the partment had found itself with little or no control over ch institutions. It had been the sole aim of the Ministry Health to see that the Act was properly administered, d particularly that the standard of medical treatment as as high as they could make it. It was very unfair, d not right, that a number of these so-called institutions ould be in the position of being under no obligation to nder any returns to the Department and over which ey had no effective control, to see that the standard of edical treatment was sufficient. When he told the mmittee that this sort of society made a profit out of a atter in which there ought not to be any profit, and that e payment to the doctors was not of a nature which sured the best medical attention, he thought they would ree that the Government were right to intervene as they d done under this clause. They said that if existing stitutions wished to put themselves within the same nditions as the old existing societies under the principal ct, and have the same objects and purposes as the old cieties which had to obey rules and regulations, then ey must apply to the Ministry of Health. If they did so eir claims would be examined sympathetically, but with e sole object of ensuring an adequate standard of treatment r their members. He also wished to make it quite clear at if such societies were approved they would have to pply proper returns to the Department and generally nduct their institutions in the same manner as the original stitutions had to do.

Dr. DAVIES said that if Sir Kingsley Wood meant that it as quite possible that in future the Ministry would sanction her schemes on similar lines to existing schemes, he would very much opposed to such a course. "Institutions" as another name for colliery clubs. On the second reading of the Bill he spoke in favour of those clubs, and said that they had done extremely good work, but he sincerely hoped that no new ones would be allowed.

Sir KINGSLEY WOOD: No new ones?

Dr. DAVIES said that the right hon. gentleman's speech was not very definite on the point. The success of all these institutions depended on the standards and qualifications of the medical men. He said, on second reading, that he was quite convinced that the medical men associated with these schemes were competent in every shape and form, and that they had done, and were doing, extremely good work, but they had to bear in mind that for some years now the British Medical Association had set their face very definitely against this type of institution or practice. Every week they put in the *British Medical Journal* a warning notice asking anybody applying for such a job to consult them first. When the present competent medical men retired, those who took their places would do so contrary to the advice of the British Medical Association; the highest type of doctor would not apply for these appointments. The majority of medical men liked to keep in touch with, and sympathy with, their fellows, and if they found that a big proportion of the profession said: "We would rather you did not take these appointments; perhaps it is not unprofessional, but it is inadvisable to do so," the best type of medical man would not accept such appointments, and ultimately they would be landed with a type of medical man, who though fully qualified was yet perhaps not the highest type of man in the profession, and ultimately the nstitutions would suffer.

Sir KINGSLEY WOOD said he would not like the medical members of the Committee to be disturbed, and he would give an assurance that the Department had no intention of dealing with any but those systems and societies which were already in existence. They did not propose in any way to encourage the practice.

Dr. WATTS said that he did not wish to encourage these institutions but if the clause was allowed to remain there was a danger. With the growing discontent in the country generally with the nature of the treatment people got under National Health Insurance, a large number of persons were anxious to band themselves together in order to make arrangements with private doctors under a system by which the insurance committees would hand over to them the capitation fee, and the patients would be willing, so he was informed, to pay a supplementary fee in order to make sure that they got decent attendance as insured persons. He held no brief for the institutions or clubs; he believed the medical attendance they gave to be equally as bad as—if it were possible to be as bad as—the medical attendance under National Health Insurance. (Laughter.) Hon. Members might laugh, but he was speaking from some knowledge of the matter. It was not the fault of the doctors. Under the National Health Insurance scheme a doctor's time was taken up in a large measure by red-tape regulations and by keeping silly records which were of no use to anybody, and which, when they arrived at the Ministry of Health, were, he was given to understand, destroyed, no use being made of them. If certain groups of the insured population banded together and made a private arrangement with medical men they would be prevented from doing so by this clause, and he therefore supported the proposal to delete it.

Mr. JOHN withdrew his opposition to the clause, which was agreed to.

Clause 4: Subscriptions to Charitable Institutions.

On Clause 4 (amendment of Section 26 of the principal Act as to subscriptions to charitable institutions). The clause provides that a society "in the case of which no disposable surplus was disclosed on the last preceding valuation, or an insurance committee, may from time to time, with the consent of the Minister, make subscriptions or donations of an eleemosynary character to hospitals and similar institutions."

Mr. BRIANT moved to leave out the words "of an eleemosynary character." His object, he said, was to remove any difficulties in the way of extending these subscriptions to any likely societies that might not exist at present, but might exist in the future.

Sir KINGSLEY WOOD said that this was perhaps a more important amendment than the hon. gentleman might realise. The particular words to which he had taken exception were intended to emphasise the nature of the subscription to be made by the societies to charitable institutions, and the intention was to limit the contribution which the society should make to general charitable gifts of an unconditional character, having regard to the excellence of the institution and the good that it was doing. The clause endeavoured to put an end to a system by which advantage was taken to enter into contracts with institutions and, in return, receive certain benefits for the society's members. They desired to see that if the societies made

charitable gifts in the future they should be genuine and not the kind of thing to which he had referred.

Dr. DRUMMOND SHIELS said that he would like the Parliamentary Secretary to the Ministry of Health to explain the term "contracts" used in his speech. The speeches which the Committee had heard had shown the obviously unsatisfactory character of the present medical attention given under the National Insurance Act, and they were warned against societies competing against each other to provide benefits under this scheme. He was interested in this section in connexion with the important matter of specialist benefit. He understood that societies in the past had tried to make arrangements with voluntary hospitals that, in return for a donation, a certain number of beds would be set aside. He knew that in many cases arrangements had been refused, as the managers of voluntary hospitals had not felt that they were entitled to make such allocations. He would like to know if an arrangement with a voluntary hospital for a certain number of beds to be set aside for a particular approved society would be allowable under this clause?

Sir KINGSLEY WOOD said he thought that the hon. Member would have an opportunity of raising this matter on another part of the Bill.

Lieut.-Colonel FREMANTLE asked whether such invaluable agencies as district nursing associations, the Queen Victoria Jubilee Nurses, and midwives societies, had been definitely and intentionally omitted, or were they included under the words "similar charitable institutions"?

The amendment was withdrawn.

Mr. HARVEY moved to leave out the words "and similar" and to insert thereof the words "dispensaries and other."

Sir KINGSLEY WOOD said he could assure his hon. friend that they did not want to rule out any charitable gifts of such a character as those to such an institution as the District Nursing Association. On the other hand, he must call the attention of the Committee to the fact that for the first time the schedule made provision for the payment of the whole, or any part, of the cost of the provision of nurses for members.

The amendment was agreed to.

The National Health Insurance Bill was further considered by Standing Committee of the House of Commons, and a detailed report will be given in a coming issue of THE LANCET.

HEALTH INSURANCE (PROVISIONAL REGULATIONS).

On Thursday, May 3rd, on the motion for the adjournment,

Mr. A. V. ALEXANDER said he desired to bring to the notice of the Government a very strong protest, first of all with regard to the increasing practice of making new breaches of contract and creating new crimes and penalties by means of regulation instead of by Act of Parliament. The necessity for some regulations under the National Health Insurance Act was apparent, but in the regulations to which he desired to draw attention, a very vital principle was involved which ought not to have been dealt with by regulation, but ought to have been the subject of amending legislation. The regulation of which he complained was found in the Medical Benefit Regulations (No. 2), 1928, which was laid on the Table of the House on April 17th. In those regulations they found the extraordinary clause:—

> Clause 4 of Part I. of the Third Schedule to the principal Regulations shall be read and have effect as if the following paragraph were added thereto: "A chemist shall not give, promise or offer to any person any gift or reward (whether by way of a share or dividend on the profits of the business, or by way of discount, or rebate, or otherwise) as an inducement to, or in consideration of, his presenting an order for drugs or appliances on a prescription form provided by the Committee."

Effect of the Clause on the Coöperative Movement.

He wanted members of all parties who were interested in the coöperative movement to observe that the clause prevented, in future, any chemist's department and a coöperative society from continuing its practice in so far as its business was conducted under the terms of the National Health Insurance Act. Any member of a coöperative society who was also a member of an approved society, who took a health prescription to be made up in a coöperative store instead of an ordinary chemist's shop, would not be allowed to be given a note to the effect that he had taken goods from the store at the rate of 5*d.*, which was the flat rate allowed to the chemist for his services. In 1925 the Parliamentary Committee of the coöperative movement had overtures made to it by the Retail Pharmacists' Union, desiring that coöperators should undertake that, in future, they would not allow the value of the prescription made up for their members under the National Health Insurance Act to count as part of their business for the final distribution of the surpluses of the coöperative societies. The Coöperative Committee said that they could not consider such a proposal, because it would cut at the root of the basic principle on which the coöperative movement did business. He had obtained an assurance from one of the principal officials of the Ministry of Health that there was nothing against the practice of allowing a member of an approved society, who was a member of a coöperative society, to share in the rightful benefits of his mutual association. Since then they had never received a word of communication from the Ministry of Health. On April 21st, however, a circular was issued to the local insurance committees, which was obviously a circular issued from headquarters. The regulations did away entirely with the present perfectly genuine trade practice of the coöperative societies in this country. The reason for the Retail Pharmacists' Union bringing pressure to bear on the Government in this matter was simply to get the Government to take sides against a body which they regarded as a trade competitor. He imagined that the only real ground of defence which the Minister of Health could possibly put forward for this action was that it had been stated that considerations were being given for prescriptions to be taken to certain chemists, and that that might lead to corruption and malingering. How many prescriptions would have to be used up by a person before he could get any substantial monetary advantage to the extent of leading to malingering? If there existed a real danger of considerations being offered to aid malingering, what were the doctors doing? Surely it was the duty of panel doctors to see that they gave prescriptions only where there were genuine cases to be treated.

Increased Cost of Drugs and Appliances.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said the regulation to which Mr. Alexander had referred was not directed against any particular body, association, or individuals, but was in the true interests of the proper administration of the National Health Insurance funds. It was well known that the position of the drug fund in connexion with national insurance had given serious anxiety to the Government and the approved societies. There were some 11,000,000 people in England and Wales who came under the ordinary drug arrangements with chemists. The average cost of drugs and appliances so far as the National Health Insurance Act was concerned had very steadily and very seriously increased. For instance, in 1916 the total cost of drugs and appliances supplied by chemists was £634,651. In 1926 that figure had risen to a sum of £1,729,078, and the Ministry of Health had been driven to the conclusion, which he thought was shared by those people who had been concerned with the administration of National Health Insurance, that whilst a certain increase was no doubt due to increased sickness, there was considerable evidence of extravagant prescribing. The difficult situation was accentuated because, under the National Health Insurance Act there was only a certain sum permitted for the cost of drugs. Directly that sum was exceeded a serious question arose as to where the increase in cost was to come from. The question that confronted his Department was whether there should be a revision of the drug tariff, or whether the fees ought to be reduced. If either of these matters were to be taken in hand it would undoubtedly be very serious, especially so far as the smaller chemist's business was concerned. Therefore his Department had several consultations with the Retail Pharmacists' Union, which represented some 8000 chemists throughout the country. They pointed out to the union that this was a case which obviously had to be met, and asked whether the union was prepared to take the matter in hand and set their own house in order? The representatives of the union gave an undertaking to his Department that they would be responsible for the proper administration of the fund, and see that it was conducted within its proper financial limits, and that the service was adequate. But, as was perfectly natural, the union said that if they were going to take this unlimited liability, proper conditions must be laid down as to the administration of this drug traffic. To show the House that there was no attack upon the coöperative societies he would cite certain instances to indicate what occurred in relation to this important benefit. A leaflet had been distributed broadcast in a particular area of London to the following effect:—

> "Insured persons will receive a free gift, value 6*d.*, for two weeks only, Sept. 19th to Oct. 3rd, 1927. Every person bringing a panel prescription to be dispensed at the above address will receive, free of charge, certain items value for 6*d.*"

Then there was the further statement:—

> "No matter where you live or who your doctor is, you are quite free to bring your prescription to Mr. ——. He is the most reliable chemist in the district."

That was, the gentleman who was offering 6*d.* He said:—

> "He is really interested in your particular case, and will give free advice to patients if required. Please bring your prescriptions as early in the day as possible. Note only address. No branches."

le (Sir Kingsley Wood) had another leaflet issued by a hemist who offered in the same way another inducement o insured persons to go to him with their prescriptions, nd in another case a draw was to take place among insured ersons, and it was stated that the insured person who took is prescription to the particular chemist and drew the inning number, would receive a solid-gold wristlet watch. very member of the House would see that that was a most ndesirable practice, and they had therefore laid down in his regulation that these inducements and gifts were not o be given. Once they directed a regulation of that kind gainst this particular practice, they obviously could not, n fairness to the other chemists who administered the Act, ermit inducements to be given by coöperative societies n the same connexion.

The motion for the adjournment was carried by 200 votes o 97.

HOUSE OF COMMONS.

WEDNESDAY, MAY 2ND.

Preservatives in Butter and Cream.

Mr. THOMAS KENNEDY asked the Secretary of State for cotland if he had received any representations from traders n Scotland regarding the effect of the regulations prohibiting he use of preservatives in butter and cream; and whether, n view of the special difficulties in Scotland involving serious ss to retail traders through the regulations, he would onsider the desirability of modifying the restriction on the se of preservatives during the summer months.—Sir J. ILMOUR replied: I have received the representations eferred to by the hon. Member. I have also received epresentations supporting the prohibition of boric acid n cream. As advised, I see no reason to modify the estriction on the use of preservative for these articles.

Regional Medical Officers' Fees.

Mr. BROMFIELD asked the Minister of Health whether he as prepared to allow regional medical officers' fees paid y approved societies to be charged against the benefit nd account instead of against the administration account, n view of the fact that a large number of approved societies ere on the border-line in respect to administration, which ct had a tendency to prevent societies using the regional edical officers as often as they would do if the cost was orne by the benefit funds instead of, as now, by the dministration account.—Mr. CHAMBERLAIN replied: No, ir. The fees in question are part of the administrative xpenditure of Approved Societies, and must, under the ct, be charged to the administration account. An increase as been made, as from the present year, in the amount per ember which societies may appropriate for purposes of dministration, and I have no reason to think that the harges for references to the regional medical Officers, hich amount on the average to under a halfpenny per ember per year, cannot be met in the proper way out of he administration account.

Accidents in the Woollen and Worsted Industries.

Mr. JOHNSTON asked the Home Secretary the number of ccidents caused by lifting heavy weights in the woollen and orsted industries prior to the order fixing maximum eights compared with the number of such accidents since he order became effective.—Sir WILLIAM JOYNSON-HICKS eplied: I regret that the figures necessary for any such omparison cannot be given. At the time these regulations ere made, no evidence was available as to the total number f cases of injury from lifting of heavy weights. What appened was that one of the employers' associations ubmitted to the Factory Department evidence of injuries o workers employed in their section of the industries, and n this evidence the Factory Department invited the ational Wool (and Allied) Textile Industrial Council to ake the matter up. The Council thereupon appointed a pecial committee, on which both employers and workers ere represented, to investigate the question. As a result f this inquiry unanimous agreement was reached and the egulations were made, at the request of the Council, to give ffect to this agreement.

THURSDAY, MAY 3RD.

School Medical Services.

Dr. VERNON DAVIES asked the President of the Board f Education the cost of the school medical services classified nder medical officers, nurses, school clinics, and treatment y dentists and oculists, for the last three years, respectively?—The Duchess of ATHOLL (Parliamentary Secretary o the Board of Education) replied: I am afraid that the eturns made by local authorities do not enable me to nalyse the expenditure under the heads named in the uestion, but the total cost of the school medical services for the last three years for which returns are available are as follows:—

	Gross expenditure.	Receipts.	Net cost.
	£	£	£
1924–25	.. 1,307,228	 53,899	 1,253,329
1925–26	.. 1,441,415	 60,970	 1,380,445
1926–27	.. 1,516,995	 66,010	 1,450,985

Substitutes for Cream.

Viscount SANDON asked the Minister of Health if he had any information as the the use of substitutes for cream by bakers and confectioners involving the breach of the Milk and Dairies Act; and what steps were being taken to circumvent this.—Mr. CHAMBERLAIN replied: It is a well-known fact that substitutes for cream are commonly used by bakers and confectioners, but so long as these substitutes are not injurious to health and the articles in which they are used are not incorrectly described. There is no offence in regard to which statutory proceedings could be taken. It is not a matter to which the Milk and Dairies Acts apply.

Miners' Phthisis.

Mr. DAVID GRENFELL asked the Home Secretary whether he had definitely arranged for the extension of the schedule of industrial diseases so as to include men who contracted miners' phthisis while following the occupation of rock-boring in coal mines by the use of compressed-air machines; and how many cases of disability from this cause had been notified to his department in the last four years.—Sir WILLIAM JOYNSON-HICKS replied: The matter is one which will have to be dealt with by a scheme under Section 47 of the Workmen's Compensation Act, 1925, and I have asked the Departmental Committee on Workmen's Compensation for Silicosis to advise as to the terms of a scheme. I have offered for this purpose to appoint to the Committee two representatives of the industry on each side, but have not yet received the reply of the Miners' Federation. The disease is not notifiable and no statistics are available, but its incidence, to a limited extent, in the coal-mining industry has been established.

Vaccination Committee's Report.

Lieut.-Colonel FREMANTLE asked the Minister of Health when the Report of the Departmental Committee on Vaccination would be published.—Mr. CHAMBERLAIN replied: This report is now being printed and will be published at an early date.

Treatment of Venereal Disease.

Miss LAWRENCE asked the Minister of Health the amount of grant given towards the treatment of venereal disease in the years 1921 and 1927, and the amount which local authorities had been informed was the maximum they would receive for the year 1927–28; the number of treatment centres for venereal disease in England in 1921 and at the present time; and the number of health authorities where no such centres were provided.—Mr. CHAMBERLAIN replied: The grants paid to local authorities for this purpose amounted to £421,687 and £272,921 during the financial years 1921–22 and 1927–28, respectively. The maximum grant payable to these authorities in respect of the financial year 1927–28 is £286,763. There are at the present time 177 treatment centres in England, compared with 184 in 1921, the reduction being due mainly to the policy adopted in some large towns of concentrating the work of two or more centres in one centre, at which extended facilities for treatment have been provided. Facilities for the treatment of venereal disease have been provided by all the local authorities responsible for this work, but in a few cases the treatment centres are outside the administrative areas of the authorities.

MONDAY, MAY 7TH.

League of Nations and World Output of Morphine.

Mr. SCRYMGEOUR asked the Secretary of State for Foreign Affairs whether he was aware that the world output of morphine had increased between 1921 and 1926 from 30 to 60 tons; and whether, in view of the statement of the Italian representative to the League of Nations that the British Government had concealed the real figures of British drug exports, he had any official information to explain the difference between the amount of drugs imported into America and the amount admitted by British exporters.—Mr. G. LOCKER-LAMPSON (Under-Secretary for Foreign Affairs) replied: The answer to the first part of the question is in the negative. A statistical summary recently issued by the League gives the production for 1926 as 40,245 kilos, and the production for 1921 as 29,657 kilos (about 40 and 30 tons respectively), but complete statistics are not available. Both the figures in question are incomplete, and the figure for 1921 more so than that for 1926. Any comparison, therefore, between them would be unsafe.

Further, the 1926 figure includes large quantities of morphine which were produced solely for transformation into non-dangerous products, such as codein. The actual quantities of morphine manufactured for sale as such were far smaller. So far as Great Britain is concerned, the manufacture of morphine has shown a steady decrease during the last five years. I am not aware that the Italian representative on the Advisory Committee charged His Majesty's Government with concealing their drug exports. He called attention to the fact that the amount of raw opium returned by Great Britain as exported to the United States was less than the amount of raw opium returned by the Government of the United States as imported from Great Britain. This discrepancy is being examined by the two Governments, but is probably due, in part, to the fact that the returns of the two Governments relate to different periods, the British returns being for the calendar year, the United States returns for the fiscal year, from July to July, and in part to the fact that opium sold from Great Britain may not be actually exported from Great Britain, but may be conveyed direct from a foreign port to the United States. The British figures are official figures compiled from the export licences issued by the Home Office, and there is no reason to question their accuracy.

Classification of Milk.

Mr. ROBERT YOUNG asked the Minister of Agriculture the total amount of milk for commercial purposes produced during the past two years; how much of it was pasteurised milk, Grade A milk, and Grade A tuberculin-tested milk; and how much described as clean milk, purified milk, &c., was produced for consumption.—Mr. GUINNESS replied: The total amount of milk produced in England and Wales during the past two years, exclusive of milk fed to calves and pigs, but inclusive of milk manufactured into various products, both on and off farms, as well as milk consumed in liquid form, has been estimated as follows: June to May (per million gallons): 1925–26, 1135; 1926–27, 1150. As regards the proportions of these quantities which may be classified as officially designated milks, it is estimated that "Certified," "Grade A (T.T.)," and "Grade A" milks constitute approximately 1 per cent. of the milk consumed as liquid milk. No reliable estimate for "pasteurised" milk is available. The terms "clean" and "purified" are not recognised as official designations; they are entirely relative terms, and as they signify no definite or absolute standard, the quantities of milk sold under them are unknown.

Death Certificates and Reports to the Coroner.

Sir CHARLES OMAN asked the Minister of Health whether, as it was part of the duty of a registrar of deaths to decide whether to give a burial certificate or whether to send a case to the coroner, he would provide that officers of the boards of guardians should not be appointed registrars of deaths for the future, and vice versa.—Mr. CHAMBERLAIN replied: A registrar of births and deaths is required by regulations to report to the coroner every death which, on the information before him in the medical certificate or otherwise, was due to any one of certain prescribed causes or occurred in certain prescribed circumstances, and, pending consideration by the coroner, to defer registration and the issue of an authority for burial. He has thus no discretion to decide whether to report such cases or not. I am aware of no reason for apprehension that registrars of births and deaths do not discharge faithfully the duties of their office in those cases where they also hold poor-law office.

BRADFORD ROYAL INFIRMARY.—The Duke and Duchess of York have laid the memorial stones of the new infirmary at Daisy Hill. This great hospital is estimated to cost at least £500,000, of which £380,000 has already been given or promised.

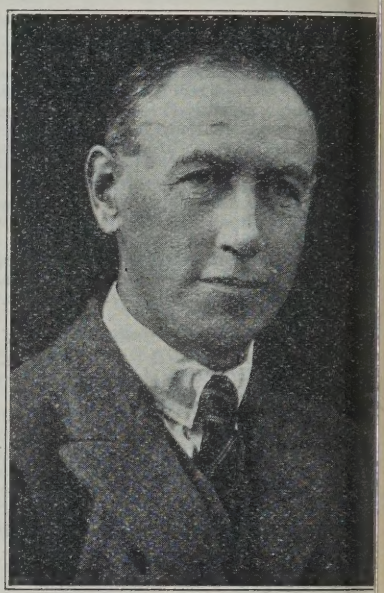
ROCKEFELLER MEDICAL FELLOWSHIPS. — The Medical Research Council will shortly award these Fellowships for the academic year 1928–29. Applications should be lodged with the Council not later than June 1st, 1928. The Fellowships are provided from a fund with which the Medical Research Council have been entrusted by the Rockefeller Foundation. Fellowships are awarded by the Council, in accordance with the desire of the Foundation, to graduates who have had some training in research work in the primary sciences of medicine or in clinical medicine or surgery and are likely to profit by a period of work at a University or other chosen centre in the United States before taking up positions for higher teaching or research in the British Isles. A Fellowship will have the value of not less than £350 a year for a single Fellow, with extra allowance for a married Fellow, payable monthly in advance. Travelling expenses and some other allowances will be made in addition. Full particulars and forms of application are obtainable from the Secretary, Medical Research Council, 15, York Buildings, Adelphi, London, W.C.2.

Obituary.

THOMAS VILLIERS CROSBY, M.D. LOND.

Dr. T. V. Crosby, of Leicester, died on April 26th after two and a half years' illness, which began just after he had retired from active practice. His death at the age of 57 will be deeply regretted by those who worked with him.

The second son of the late Mr. James Crosby, of Burlescombe, in Devon, he was educated at Blundell's School, Tiverton, and at University College, London, from which he graduated in medicine in 1894. As a student at University College Hospital and afterwards as resident, he came into contact with several men who were to be fellow practitioners and life-long friends in Leicester, where he settled on leaving London. He was appointed assistant physician to the Royal Infirmary in 1902, and his practice soon became a large one, so that assistance was eventually required. He was joined in partnership by Dr. Ernest Parker in 1916 and later by Dr. A. V. Pegge, Dr. Ernest Garratt, and Dr. Harold Ingham, all of whom, like himself, had served for a time as medical resident officers at the infirmary.



DR. T. V. CROSBY.

Photograph by F. Sproston.

Apart from his duties as a general physician, Dr. Crosby was a skilful anæsthetist. A colleague at the infirmary writes of him that he was "a conscientious worker, always ready to give a helping hand to others; always perfectly willing to assist in anything which might help in the smooth running of the medical work. His kindly disposition endeared him to patients and colleagues alike. He had many friends, enjoyed being in company, and was fond of sport, but in recent years his work monopolised his whole time and he found little chance of recreation. Country bred, he lived an active life in a large city, but his tastes were simple, he cared nothing for show, and his sympathies were broad. Such characteristics form the most laudable of our profession. The memory of T. V. Crosby will be cherished alike by patients and colleagues as one of unusual kindness."

For some years Dr. Crosby served the city as a guardian of the poor, but during the war he had to relinquish this responsibility in favour of service with the Fifth Northern General Hospital, a Territorial unit to which he was appointed, with a major's commission, in 1908. In his earlier years he was a fair shot, a good horseman, and a Rugby forward, but his leisure pursuits were reduced to a minimum long before his retirement at the end of 1926. The illness which followed was borne with the imperturbability that had characterised his professional life.

Dr. Crosby married in 1898 the second daughter of Mr. G. J. B. Woolley, J.P. She survives him with two sons, one of whom is Dr. G. J. V. Crosby, of Bushby, Leicester.

Medical News.

UNIVERSITY OF OXFORD.—At a Congregation held May 3rd the following degrees were conferred:—

D.M.—L. N. Jackson.
B.M.—C. W. Flemming.

UNIVERSITY OF CAMBRIDGE.—At a Congregation held on May 3rd the following degrees were conferred:—

M.B., B.Chir.—P. E. Pym, G. D. Thomson.
M.B.—C. E. Kellett.
B.Chir.—G. C. Milner.

UNIVERSITY OF SHEFFIELD.—At the undermentioned examinations held recently in the Faculty of Medicine the following candidates were successful:—

Final M.B., Ch.B. (Part I.).—John D. Gray and Bessie Hatherley.

Third M.B., Ch.B.—William H. Carlisle, Abraham Cohen, Frank Ellis (with distinction in Pathology), Ralph B. Gould, Iris M. Moody, Sankar K. Panniker, Thomas H. Pullar (with distinction in Anatomy, Pathology, and Pharmacology), Isaac Slesnick, and John H. Wilbourn.

ROYAL COLLEGES OF PHYSICIANS OF LONDON AND SURGEONS OF ENGLAND.—At the Final Examination of the Conjoint Board held from March 26th to April 20th the following candidates were approved in the subjects indicated:—

Medicine.—V. E. N. Allen, Bristol; M. A. E. Anous, Cairo and Middlesex; Lucy E. Arthur, Royal Free; H. F. Bateman, Cambridge and St. Bart.'s; W. A. Bellamy, St. Bart.'s; T. H. Berrill, Bristol; C. V. Bloom and K. C. Blyth, London; N. J. Boulton, Guy's; Beatrice A. Butterworth, Royal Free; L. A. Canaan, London; Mavis H. D. Carr, Cambridge and Royal Free; B. R. Caygill, Leeds; Nellie Clifton, Royal Free; L. I. Cohen, London; Elizabeth Cooper, Royal Free; J. H. Crawford, St. Mary's; Evelyn M. Davies, King's Coll.; W. F. de Villiers, Cape and London; Marjorie M. Dobson, Royal Free; R. M. Dowdeswell, Cambridge and St. Thomas's; Geraldine W. Everett, Royal Free; P. H. Fox, Cambridge and St. Bart.'s; Agnes B. Francklyn, St. Mary's; Leslie Godlove, Leeds; Valentina P. Guercken, Westminster; C. K. Haskard, Adelaide and London; W. E. Herbert, Guy's; Violet L. de A. Hickson, Westminster; D. R. House, Bristol; K. Jilani, Liverpool; C. H. Johnson, Guy's; Esther M. Killick, Leeds; K. E. Lane, Guy's; Jane S. McDowell, Charing Cross; K. L. Malhautra, Univ. College; A. Milner, Leeds; Edith G. Niven, Univ. College; Dorothy M. M. Rees, Charing Cross; R. D. Robinson, St. Bart.'s; W. P. Roe, Guy's; Pattie E. Rose, St. Mary's; Margaret C. Rosser, Birmingham; Alice I. Roughton, Cambridge; Eluned Saunders, Westminster; Christine F. T. Saville, Univ. College; Elizabeth S. Smith and G. A. Stevenson, Birmingham; Frances J. Vinter, Royal Free; A. T. D. Whitfield, Birmingham; and G. W. Willcox, Cambridge and St. Thomas's.

Surgery.—G. M. Ali, Royal Free; Constance E. Allen, Charing Cross; G. Allen, London; Sofia Antonovitch Royal Free; T. C. Baker, St. Mary's; W. A. G. Bell, Cambridge and St. Thomas's; G. Bellman, St. George's; H. Bernstein, Univ. College; F. A. Blackwood, St. Thomas's; J. V. Broad, St. George's; M. K. Bryce, London; Beatrice A. Butterworth, Royal Free; L. A. Canaan, London; H. A. Clarke, Guy's; A. M. Clarkson, Univ. College; W. A. Clements, Sheffield; Dorothy M. Conyers, Royal Free; S. J. Cope, St. Thomas's; T. M. Corcoran, Univ. College.; E. Courtin, St. Thomas's; A. M. Cunningham, Univ. College; T. Dagger, Liverpool; A. Danin, Guy's; H. W. Daukes, St. Thomas's; F. T. Doleman, St. Mary's; E. C. Duffett, Guy's; E. L. Edmondson, Cambridge and London; H. F. Ellis, Liverpool; J. W. Ellis and M. M. El Mishad, Guy's; G. W. Etches, Leeds; I. Friedman, Guy's; L. Godlove, Leeds; F. W. H. Grenier and J. P. Gubbins, London; H. S. Hamlin, St. Thomas's; W. F. L. Hannay, Guy's; H. Harris, Manchester; R. T. Hicks, Univ. College; B. Hoffenberg, Liverpool; J. M. Hulett, Guy's; K. T. Hunter, Toronto; J. Ives, St. Mary's; M. Jafar, Punjab; L. A. Joelson, London; S. E. Knowles, Guy's; M. L. Kreitmayer, St. Bart.'s; A. J. C. Latchmore, Leeds; A. J. Leslie-Spinks, Oxford and Westminster; A. L. Light, Leeds; C. M. MacGeoch, Birmingham; H. M. Mills, Royal Free; L. Milner, Guy's; G. P. Nixon, St. Bart.'s; J. P. O'Donnell, Leeds; L. G. M. Page, St. Bart.'s; A. J. D. Perkin, St. Thomas's; Alice D. K. Peters and H. G. Pritchard, Charing Cross; A. S. Rajasingham, Middlesex; R. G. E. Richmond and H. G. G. Robertson, St. Thomas's; R. S. Robinson, Middlesex; H. W. Round, Birmingham; I. A. Sabri, St. Bart.'s; M. V. Samuel, Adelaide and London; S. Schenkman, London; J. E. Schneider, St. Thomas's; D. A. Seaman, Birmingham; G. M. A. Shaikh, London; A. Southgate, Charing Cross; T. T. Stamm, Guy's; A. R. Thomas, St. George's; E. W. Thompson, Manchester; V. C. Thompson, St. Bart.'s; J. G. Thwaites, St. Thomas's; B. T. Utley, St. George's; H. D. Vasey, St. Thomas's; V. C. Verbi, King's Coll.; P. Wiles, Middlesex; G. W. Willcox, St. Thomas's; L. V. Williams, St. Bart.'s; Muriel Williams, King's Coll.; L. K. Wills, Guy's; W. A. Wilson, Univ. College; J. Winter, Middlesex; F. W. J. Wood and T. C. Yip, St. Bart.'s; and E. Zimbler, Middlesex.

Midwifery.—S. S. Ahluwalia, Lahore; Gulzar M. Ali, Royal Free; G. Allen, London; M. W. Atkinson, Middlesex; T. C. Baker, St. Mary's; H. F. Bateman, St. Bart.'s; W. A. G. Bell, Cambridge and St. Thomas's; W. A. Bellamy, St. Bart.'s; Mark Berkeley, Royal Free; Kathleen L. Bland, Univ. College; K. S. P. Blatchley, Edinburgh; N. J. Boulton, Guy's; G. H. Bradshaw, Cambridge and St. Bart.'s; J. V. Broad, Cambridge and St. George's; M. A. Chamberlain, Manchester; Rochelle Churin, Royal Free; A. M. Clarkson, Univ. College; W. A. Clements, Sheffield; Lilian M. C. Clopet, Cardiff; S. J. Cope, St. Thomas's; J. E. Curnock, Charing Cross; T. Dagger, Liverpool; K. K. Dalal, Middlesex; A. Danin, Guy's; H. W. Daukes and D. C. L. Derry, St. Thomas's; P. C. C. de Silva, King's Coll.; W. F. de Villiers, London; F. T. Doleman, St. Mary's; H. F. Ellis, Liverpool; W. T. Ellis, Manchester; N. B. Fadia, Bombay; M. Gamboa, St. Bart.'s; Agnes G. Gillespie, Liverpool; H. Gordon, Durham; I. Gordon, St. Bart.'s; C. Graham, Belfast; Valentina P. Guercken, Westminster; H. W. Guinness, St. Bart.'s; Hafizuddin, Charing Cross; A. G. J. Harris, St. Bart.'s; Violet L. de A. Hickson, Westminster; C. F. House, St. Thomas's; Esme I. Hyam, Univ. College; J. Ives, St. Mary's; D. T. Jones, Guy's; E. G. M. Jones, Univ. College; W. D. G. Jones, Guy's; C. Jotikasthira, St. Thomas's; A. Kellner, London; B. Kettle, St. Bart.'s; Florence E. Kingsley, Westminster; M. L. Kreitmayer, St. Bart.'s; G. Lal, London; K. E. Lane and T. C. Lansdale, Guy's; A. G. Lloyd, Durham; F. T. F. Lutter, Cambridge and St. George's; T. K. S. Lyle, Cambridge and King's Coll.; R. G. Macbeth, Oxford and King's Coll.; C. M. MacGeoch, Birmingham; Mary I. C. Mackintosh, Manchester; Kathleen M. MacLaren, Westminster; C. E. Martin, Birmingham; W. T. Mills, St. Bart.'s; L. Milner, Guy's; L. H. Morris, Cambridge and London; L. P. Naz, Univ. College; G. S. Nightingale, London; S. P. Notani, Bombay; R. I. O'Farrell, Sheffield; G. W. Oliphant, Guy's; C. R. L'E. Orme, Cambridge and King's Coll.; P. M. Oxley, St. Bart.'s; A. J. Parer, King's Coll.; T. Parukutti-Ammal, Royal Free; A. W. Patton, St. Bart.'s; M. G. Pearson, Westminster; A. J. D. Perkin, Cambridge and St. Thomas's; I. E. Phelps, St. Bart.'s; P. H. L. Playfair, Cambridge and King's Coll.; A. S. Rajasingham, Middlesex; R. A. C. Rice, St. Bart.'s; R. S. Robinson, Middlesex; J. A. Robson, St. Bart.'s; G. Rocyn-Jones, Cambridge and King's Coll.; W. P. Roe and E. B. Rogers, Guy's; A. L. Rosenthal, Manchester; Margaret C. Rosser, Birmingham; I. A. Sabri, St. Bart.'s; K. T. Samatapala, King's Coll.; M. V. Samuel, Adelaide and London; J. E. C. Sayers, St. Thomas's; S. A. Scorer, H. M. Sein, and H. Selby-Brown, Guy's; R. R. Shapland, Middlesex; H. T. Simmons, Manchester; U. P. Sinha, Calcutta and Patna; T. T. Stamm, Guy's; M. Sternfeld, Freiburg; L. Taylor, Sheffield; R. S. Thomas, Guy's; J. G. Thwaites, St. Thomas's; W. E. Tucker, Cambridge and St. George's; R. G. L. Waller, Westminster; P. Wiles, Middlesex; L. K. Wills, Guy's; Kathleen Wilson, King's Coll.; W. A. Wilson, Univ. College; F. W. J. Wood, Cambridge and St. Bart.'s; F. C. A. Wright, King's Coll.; J. M. Wrigley, Sheffield and London; and T. C. Yip, St. Bart.'s.

THE RATING OF HOSPITALS.—The Devonshire Valuation Committee recently convened a conference of representatives of rating and assessment committees, the object of which was to fix a uniform rate for the assessment of voluntary hospitals in the county. The assessments at present vary enormously, the lowest figure per bed being 3*s.* and the highest £4 4*s.* The county valuation officer suggested £3 per bed gross, but the conference decided that the amount should be 7*s.* 6*d.*, to include nurses' beds.—Mr. Walter Kewley, the house governor of Middlesex Hospital, has written a letter urging the total exemption of hospitals from local rates.

CONTINENTAL ANGLO-AMERICAN MEDICAL ASSOCIATION.—The annual meeting, the first since the late war, was held at the Hôtel de Paris, Monte Carlo, on May 1st, members attending from the whole length of the Italian and French Rivieras. Dr. R. Pryce Mitchell (Monte Carlo), who presided, explained the objects of the Association and acknowledged the debt of gratitude due to the hon. secretary, Dr. R. Sherwood-Dunn (Nice) for his successful efforts in resuscitating the Association. Dr. Sherwood-Dunn, in presenting his report, said he had visited Paris for a personal interview with Dr. R. Turner, a former hon. secretary, and other old members, and had endeavoured to communicate with the 122 medical men and women whose names appeared in the last issue of the Continental Anglo-American Medical Directory. The report was approved and it was decided to limit membership of the Association to persons of British and American nationality and to those possessing British and American qualifications who are rightfully practising in Europe or Northern Africa. The annual subscription was raised from 40 to 100 French francs. At a banquet held the same evening Dr. H. Warren Crowe, an hon. president, presented to Dr. Thomas Linn (in absentia), founder of the Association, on behalf of its members, an address and the latest edition of the Encyclopædia Medica. The evening concluded with a visit to the Russian ballets in the local theatre at the invitation of the directors of the Casino.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—The Registrar of this College announces that a Charles Murchison Scholarship in Clinical Medicine will be awarded after an examination on June 26th, and that a Streatfeild Research Scholarship in Medicine and Surgery, tenable for three years, and valued at £250 per annum, is to be offered in conjunction with the Royal College of Surgeons of England. Further information will be found in our advertisement columns.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—A quarterly meeting of the College was held on May 1st, with Dr. Robert A. Fleming, the President, in the chair. Dr. James Thomson was introduced and took his seat as a Fellow of the College. Dr. John Bowes McDougall and Dr. Anna Justina Augusta Wilson were elected Fellows of the College.

Alfred Joseph Clark, Margaret Black Martin, David Taylor Hackie, Joseph Ryland Whitaker, and Mohamed Abd El-Hamid Gohar were elected Members of the College.

Dr. Robert Thin was elected a representative of the College on the Conjoint Committee of Management of the Triple Qualification.—Dr. William Russell was re-elected the representative of the College on the General Council of Medical Education and Registration.—The Lister Fellowship was awarded to Dr. Charles G. Lambie for his work on carbohydrate metabolism.

At an extraordinary meeting held the same day, Dr. Walter Tyrrell Benson was elected a Fellow of the College.

UNIVERSITY OF LONDON: *University College.*—A public lecture on Modern Trends in the Study of Animal Development will be given by Prof. R. G. Harrison, of Yale University, on Monday, May 21st, at 5.30 P.M. Prof. Elliot Smith, F.R.S., will preside and admission will be free without ticket.

BIOCHEMICAL SOCIETY.—The next meeting of the Society will be held on Saturday, May 12th, beginning at 11.45 P.M., in the Department of Brewing and Biochemistry of Fermentation, of the University of Birmingham.

UNIVERSITY OF LONDON GRADUATES' ASSOCIATION. At a meeting of the Council of this association, held on May 7th, it was resolved, nem. con., to support the re-election of Dr. E. Graham Little as representative of the University in Parliament.

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—At a meeting of this Society to be held to-day (Friday, May 11th), at 8.45 P.M., at the Miller General Hospital, Greenwich, Dr. Charles Thomson will give a presidential address on Intestinal Stasis: Its Effects and Treatment.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, May 15th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.
WEDNESDAY.—8.30 P.M., DERMATOLOGY, SURGERY. Special Discussion on Treatment of Varicose Ulcers by Intravenous Injection. Openers: Prof. Sicard (of Paris) (Dermatology), Mr. Twistington Higgins (Surgery). Other speakers will include Sir Sidney Alexander, Dr. Goldsmith, and Mr. David Levi.
THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) Annual General Meeting (at 4.45 P.M.). Election of Officers and Council. Cases: Dr. H. W. Barber: (1) Kaposi's Idiopathic Hæmorrhagic Sarcoma. (2) Morphœa with Root Distribution. Other cases will be shown. The Annual Dinner will be held at 7.45 for 8 P.M.
FRIDAY.—5 P.M., DISEASE IN CHILDREN. (Cases at 4.30 P.M.) Annual General Meeting: Election of Officers and Council. Cases will be shown. 8 P.M., OBSTETRICS. Annual General Meeting: Election of Officers and Council. Specimens: Mr. R. Christie Brown: A Case of Perforation of the Uterus, Following the Criminal Attempt to Induce Abortion in a Case of Tubal Pregnancy. Mr. J. Bright Banister: A Case of Ovarian Pregnancy. Mr. W. Gilliatt and Dr. R. M. Saunders: An Unusual Case of Interstitial Pregnancy. Short Communication: Dr. Everard Williams: Full-Term Pregnancy in a Patient with Grave Myelocytic Leukæmia. 6.30 P.M., ELECTRO-THERAPEUTICS. Annual General Meeting: Election of Officers and Council. Annual Dinner at 7.15 for 7.30 P.M. at the Café Verrey, Regent-street, W.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
The Annual General Meeting and Conversazione arranged for Monday, May 14th, has been postponed to Monday, May 21st. At 9 P.M. on this evening Sir Archibald Garrod will deliver an oration entitled "Lessons on Rare Maladies."

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.
THURSDAY, May 17th.—8.15 P.M. (at 11, Chandos-street, Cavendish-square, W.), preceded at 7.45 P.M. by a demonstration to illustrate the subject of the paper. Dr. George W. Bray (Medical Officer, Nauru, Central Pacific): Vitamin-B Deficiency in Infants—Its Possibility, Prevalence, and Prophylaxis.

LONDON CLINICAL SOCIETY.
THURSDAY, May 17th.—8.15 P.M. (at the London Temperance Hospital), Clinical Evening.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.
WEDNESDAY, May 16th.—3.30 P.M. (in the Great Hall of the British Medical Association, Tavistock-square, W.C.) Sir John Macpherson: Maudsley Lecture—The New Psychiatry and the Influences which are Forming It.

ROYAL MICROSCOPICAL SOCIETY, 20, Hanover-square, W.
WEDNESDAY, May 16th.—7.30 P.M., Dr. H. Moore, D.Sc. The Mode of Formation of the Image in the Microscope. Mr. G. F. Marrion, M.Sc., and Dr. A. S. Parkes, Ph.D. The Effects of Inanition and Vitamin B Deficiency Upon the Testes of the Pigeon. Miss M. E. Shaw, M.Sc., and Dr. F. W. Rogers Brambell, D.Sc.: An Aberrant Ovary in a Frog.

ROYAL STATISTICAL SOCIETY.
TUESDAY, May 15th.—5.15 P.M. (in the Hall of the Royal Society of Arts, John-street, Adelphi, W.C.), Mr. D. Caradog Jones: The Cost of Living of a Sample of Middle-Class Families.

CHELSEA CLINICAL SOCIETY.
THURSDAY, May 15th.—8.30 P.M. (at the Hotel Rembrandt, Thurlow-place, S.W.), Dr. J. H. Ruffel and Dr. O. L. de Wesselow: Clinical Value of Biochemical Methods.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON: Harvey Celebrations.
MONDAY, May 14th.—11 A.M., Reception by the King at Buckingham Palace. 3 P.M., Reception at the College. 6.30 P.M., Dinner given by Grocers' Company, Grocers' Hall, E.C. 9 P.M., Lady Bradford "At Home," 8, Manchester-square.
TUESDAY.—10.30 A.M., Demonstrations at University College; kinematograph reproduction of Harvey's original experiments. 1.15 P.M., Luncheon at St. Bartholomew's Hospital. 4 P.M., Tea and Exhibition at St. Bartholomew's Hospital. 9 P.M., Conversazione at Merchant Taylors' Hall.
WEDNESDAY.—10.30 A.M., Demonstration at University College. 6.30 P.M., Dinner by the President and Fellows of the Royal College of Physicians at the Guildhall.
THURSDAY.—Visit to Oxford. 8.30 P.M., Reception by the President of the Royal Society at Burlington House.
FRIDAY.—Visit to Cambridge.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, May 14th, to SATURDAY, May 19th.—NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W. Clinical demonstration by Dr. Thomas Cotton on Tues., at 2.30 P.M.—ST. MARK'S HOSPITAL, City-road, E.C. Clinical demonstration by Mr. W. H. Gabriel on cases illustrating Diseases of the Rectum on Tues., at 5 P.M.—ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C. Clinical demonstration by Mr. Whiting on Thurs., at 1 P.M. The above are free.—INFANTS HOSPITAL, Vincent-square, S.W. Course on Diseases of Infants, afternoons only (second week).—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive course—clinical and operative. Three weeks. All day.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Course in Psychological Medicine (third week).—NATIONAL HOSPITAL, Queen-square, W.C. Course in Neurology for two months. Particulars and fees from the Fellowship of Medicine.—ROYAL FREE HOSPITAL, Gray's Inn-road, W.C. On Wed., at 5 P.M., Prof. Louise McIlroy will give the first of four lecture-demonstrations on Antenatal Diagnosis and Treatment. Further particulars from the Secretary.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, May 14th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Spastic Paraplegia (1).
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Risien Russell: The Significance of Muscular Atrophy.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Gordon Holmes: Active Infective Diseases of the Central Nervous System (2).
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M. Sir Percy Sargent: Meningeal Tumours from the Surgical Standpoint.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY, Paddington, W.
THURSDAY, May 17th.—5 P.M., Prof. Hamilton Hartridge, F.R.S.: Poisoning by Coal Gas and Products of Combustion.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.
MONDAY, May 14th.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M. Dr. Trevor Davies: Gynæcological Department.
TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose, and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Department.
FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patients.
TUESDAY, May 15th.—4.30 P.M., Special Lecture, Mr. Sinclair: Gall-stones.
Daily, 10 A.M. to 5 P.M., SATURDAYS, 10 A.M. to 1 P.M., In-patients, Out-patients, and Special Departments. Anæsthetic and Operative Surgery Courses.

ADWICK PUBLIC LECTURE.
TUESDAY, May 15th.—8.15 P.M. (at the House of the British Medical Association, Tavistock-square, W.C.), Major Walter Elliot, M.P.: Sunlight—Natural and Manufactured—Its Use in Modern Medicine.

IVERSITY COLLEGE, Gower-street, London, W.C.
TUESDAY, May 15th, THURSDAY, May 17th, and FRIDAY, May 18th.—Prof. L. H. Henderson (Harvard): Blood, a Study in General Physiology.

YAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, May 15th.—3.15 P.M., Mr. C. C. Choyce: Some Reflections on Tumours of the Breast.

STITUTE OF HYGIENE, 28, Portland-place, W.
WEDNESDAY, May 16th.—3.30 P.M., Prof. J. W. H. Eyre: Rheumatism from the Bacteriological Viewpoint.

RTH-EAST LONDON POST-GRADUATE COLLEGE, rince of Wales's General Hospital, Tottenham.
MONDAY, May 14th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Tuesday and Friday, at 2.30 P.M., there will also be demonstrations of Surgical Cases and Cases for X Ray by Mr. W. E. Tanner and Dr. S. C. Shanks respectively.

NDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 9, Leicester-square, W.C.
MONDAY, May 14th.—5 P.M., Dr. J. E. M. Wigley: Napkin-Area Eruptions in Infants.
TUESDAY.—5 P.M., Dr. H. M. MacCormac: Treatment of Syphilis.
THURSDAY.—5 P.M., Dr. I. Muende: Pathology Demonstration.
FRIDAY.—5 P.M., Dr. K. Sibley: Alopecia.

IVERSITY OF BIRMINGHAM.
THURSDAY, May 17th.—4 P.M., Dr. L. G. Parsons: Recent Advances in Our Knowledge of Rickets and Allied Diseases. (Last Ingleby Lecture.)

NCHESTER ROYAL INFIRMARY POST-GRADUATE OURSE.
TUESDAY, May 15th.—4.15 P.M., Dr. A. Ramsbottom: Treatment of Pernicious Anæmia.
FRIDAY, 4.15 P.M., Mr. W. H. Hey: Demonstration of Surgical Cases.

IVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, May 8th.—3.30 P.M. (at the Royal Hospital), Dr. Skinner: Neurological Cases.

Appointments.

KWOOD, J. F., M.B. Lond., F.R.C.S. Eng. & Edin., has been appointed Resident Medical Officer, Farnborough Hospital, Kent.
ILL, H. M., M.B., B.Ch. Edin., Assistant Medical Officer to the Stokesley, Yorks, Board of Guardians.
ifying Surgeons under the Factory and Workshop Acts: DAWSON, R., M.B., Ch.B. Aberd. (Middleton-in-Teesdale); WARD, K. L. S., M.B., Ch.B. Edin. (Westerham); and DOYLE, J. L. C., L.R.C.P. Lond., M.R.C.S. (Fakenham).

Vacancies.

For further information refer to the advertisement columns.
ford Borough.—M.O.H., &c. £900.
on Infirmary Dispensary.—H.S. £150.
ghton, Royal Sussex County Hospital.—Cas. H. S. £120.
nley County Borough.—Asst. M.O.H, &c. £475.
diff, King Edward VII, Welsh National Memorial Assoc.—Area Asst. Tuber. P. £600.
lsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At rate of £100.
Chester Royal Infirmary.—H.S. £150. Also Hon. Phys.
City of London Maternity Hospital, 102, City-road, E.C.—Asst. Res. M.O. At rate of £80.
Denbigh, North Wales Counties Mental Hospital.—Third Asst. M.O. £300.
Durham County and Sunderland Eye Infirmary.—H.S. £450.
Durham County Council.—Asst. Welfare M.O. £600.
Durham, Holywood Hall Sanatorium, Wolsingham.—Asst. M.O. £450.
Evelina Hospital for Children, Southwark, S.E.—H.P. £120.
Exminster, near Exeter, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Hong-Kong, University Faculty of Medicine.—Professor of Physiology. £800.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Med. Registrar. Honorarium of £100.
Leamington Spa, Warneford General Hospital.—Res. H. P. £165.
Leeds, City of.—Asst. M.O. for Maternity and Child Welfare, £600.
Leeds, St. James' Hospital.—H.P. and S. £200.
Leyton, Borough of.—M.O.H. £1100.
Liverpool and District Hospital for Diseases of Heart.—Research Fellowship. £150.
London Hospital, E. (Cardiographic Dept.).—Paterson Research Scholar. £400.
London Skin Hospital, 40, Fitzroy-square, W.—Hon. P. or S. and Surg. Reg.
Madras Presidency, India.—Specialist on Venereal Diseases. Rs.1600 per month.
Maidstone, Kent Education Committee.—School Medical Inspector. £600.
Manchester, Ancoats Hospital.—H.P. At rate of £100.
Manchester Royal Infirmary.—Med. Reg. £150.
Manor Hospital, Golders Green, N.W.—H.S. At rate of £200.
Metropolitan Hospital, Kingsland-road, E.—Phys. to Dis. of Skin Dept.
Middlesex Hospital, W.—Surg. and Asst. Surg.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Ophth. S.
New Zealand Mental Hospitals Dept.—Sen. Asst. M.O.'s. £765–£900.
Nottingham, Ransom Sanatorium.—Asst. Res. M.O. £375.
Queen's Hospital for Children, Hackney-road, E.—Phys. in charge of Skin Dept.
Royal College of Physicians of London.—Charles Murchison Scholarship in Clin. Med. 20 guineas.
Royal College of Physicians of London and Royal College of Surgeons, England.—Streatfeild Research Scholarship in Med. and Surg. £250.
Royal College of Surgeons of England.—Professors and Lecturers. Also Examiners in Dental Surgery.
Royal Naval Medical Service.—Surg. Lieutenants. £453.
St. Albans and Mid Herts Hospital and Dispensary.—Res. H.S. £150.
St. Andrew's Hospital, Dollis Hill, N.W.—Sen. and Jun. Res. M.O.'s. At rate of £150 and £120 respectively.
St. Andrew's University.—Chair of Midwifery and Gynæcology.
Shanghai Municipal Council, Public Health Dept.—Asst. Pathologist. Taels 600 per mensem.
Sheffield Royal Hospital.—Asst. Pathologist. £400.
Southampton, Royal South Hants and Southampton Hospital.—H.P. £130.
Stockport County Borough.—Asst. M.O. £600.
Stockport Infirmary.—H.S. £175.
University of London, South Kensington, S.W.—Sir William Dunn Chair of Pathology. £1330.
Walsall County Borough.—Asst. M.O. £600.
Walsall General Hospital.—H.S. At rate of £125.
Wembley Hospital.—Hon. Consulting Radiologist.
West London Hospital, Hammersmith-road, W.—H.P., H.S., Res. Asst. Cas. O. Also Aural and Ophth H.S. Each at rate of £100.
Winchester, Royal Hampshire County Hospital.—H.P. At rate of £150.

The following vacancies for Certifying Factory Surgeons are announced: Kirkwall (Orkney), Halstead (Essex), and Lewes (Sussex).

Births, Marriages, and Deaths.

BIRTHS.

ADAMS.—On May 4th, at Avenue-road, N.W., the wife of Dr. F. Shirley Adams, of a daughter.
BEVAN.—On April 30th, at a nursing home, the wife of Dr. Frank A. Bevan, of Hadleigh, Essex, of a daughter.
GIBSON.—On May 4th, at Amalfi, Kents-road, Torquay, the wife of Dr. Paul Currey Gibson, of a daughter.

MARRIAGES.

FINNY—MANNERS SMITH.—On April 30th, at St. George's Church, Camberley, Major Charles Morgan Finny, O.B.E., R.A.M.C., to Doris Manners Smith, daughter of the late Lieut.-Colonel John Manners Smith, V.C., C.V.O., C.I.E., and Mrs. Manners Smith, Home, King's Ride, Camberley.

DEATHS.

ELLIOTT.—On April 28th, at Broad-street, Stamford, George Elliott, L.R.C.P., L.R.C.S., aged 65.
FENN.—On May 3rd, at Ashley Park, Rusthall, Tunbridge Wells, Joseph H. Fenn, M.R.C.S., L.R.C.P., late Captain, R.A.M.C.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE HOSPITAL OF ST. MATTEO, ZARA.

THE writer of the article on Yugoslavia, which appeared last week in THE LANCET, sends us a description of this institution in Zara which he visited while on the tour. He points out that it would have been inconvenient to include an inspection of St. Matteo in an article dealing with Yugoslavia, inasmuch as that country and Italy manifest such reluctance to be associated in the minds of Europe. Zara and a few miles of territory to the east of it are, of course, in an Italian enclave on the Adriatic coast. "A section of the touring party," writes our correspondent, "complied with the necessary passport formulæ and went up from Sebenico to Zara. It was necessary to leave their car outside the city and enter by cabs which had been telephoned for to meet them on the frontier. In the city of Zara they were met by the Prefect, by Major Grant Smith, an English resident, and other representatives of science and business, and were conducted round the interesting city, when they had the good fortune to have an excellent cicerone, whose descriptions of the cathedral, the old noble residences, the fortifications, and harbour made clear why the possession of Zara has always played a part in political and military contests. But from the medico-social point of view the institution of the greatest interest offered by Zara proved to be the Hospital of St. Matteo, a shelter for aged and indigent women, owing its foundation to the generosity of a wealthy citizen named Pavaz. This handsome building, situated on the Cereria, just without the walls of the city, stands in large and well-kept grounds and interiorly is a model of cleanliness and good arrangement. The funds are administered by the Congregation of Charity, with a resident Sister Superior and a lay president; and public statements are made from time to time as to the care of the inmates. Such refuges for subjects who form a particularly difficult charge upon health authorities might well be instituted by charitable folk in this country, and the St. Matteo Hospital at Zara would be a good model."

POLYNEURITIS COMPLICATING MUMPS.

NEUROLOGICAL complications of epidemic parotitis are not uncommon, but it is rare to find diffuse polyneuritis following this infection. In a case recently published by Dr. W. S. Collens and Dr. M. A. Rabinowitz [1] the patient was a man of 29 who had a mild attack of mumps followed a week later by orchitis. Three weeks after the onset of mumps he felt weakness in the legs, and in 48 hours was almost unable to move; besides quadriplegia he had complete bilateral upper and lower facial paralysis. No reflexes, deep or superficial, could be elicited, and after another day he complained of hyperæsthesia of the hands and feet. About a week later he showed signs of returning control, and about four months from the onset he was perfectly well again. The authors quote four previous cases, which are all they have been able to find in the literature; in each of them, as in their own, the picture resembled the condition seen in other specific fevers and in poisoning by alcohol and lead. Flaccid paralysis of the extremities, loss of both deep and superficial reflexes, slight or no sensory disorders and disturbance of muscle and joint sense were common to the five cases. All the patients recovered completely after illnesses lasting for 1–12 months. Whilst this alarming syndrome is too rare to be of much clinical importance, it raises once again the interesting question why such a complication should affect some patients and not others.

THE SCHOOL-BOY'S HOWLER.

THE familiar school-boy howler does not arouse in the minds of most people much curiosity into the causes of juvenile malapropisms. Sir John Adams. however, attempts a scientific investigation [2] into the causes of these amusing and instructive phenomena. Close scrutiny of the atmosphere of the class-room throws light upon the child's errors. The over-zealous teacher may be led to the belief that his function is to impart knowledge at all costs. He may take delight in so doing and may be completely carried away by his own flow of pedagogic eloquence. Indeed, according to Sir John Adams the pedantry that grows out of excess of method is manifest in the rigid adherence to rule even of such apparently broad and free methods as those of Froebel and Montessori. Unless the peculiarity of the mental life of the child be taken into account, unless the teacher identifies himself with the child's mental world, modifying hi vocabulary and seeing the child's needs, he will find tha the knowledge he has imparted has been twisted into th youthful mould and will, when re-evoked, appear grotesquel distorted. It is the duty, therefore, of the teacher to buil a bridge from this inner world to that world of organise experience which adult and realistic thinking has constructed To achieve this the teacher must have explored the processe of the one and the collective and systematised data of th other.

Sir John Adams has written an enlightened and instructiv book, illuminated with flashes of humour and a warr humanity.

RELATION OF THE THYROID GLAND TO THE NASAL MUCOUS MEMBRANE.

THE theory has been put forward that a common embryc logical origin has imposed on the thyroid gland and th nasal mucous membrane a common response to stimul Dr. Giuseppe Calogero, of the University of Naples, ha lately published [1] some experiments which are intended t establish the reality of the connexion between the tw He operated on a dog and five guinea-pigs by cauterisin the nasal fossæ with a weak nitric acid solution on a fir red hot iron wire. The animals were afterwards killed, an on examining the thyroid gland Dr. Calogero found hist logical changes from which he infers that the stimul produced by the cauterisation gives rise in the first instan to an increase in the secretory activity of the thyroid, an secondarily leads to phenomena of hyperplasia in th lining cells of the acini, presumably through the medium the sympathetic nerves which connect both the nas mucosa and the thyroid gland to the cervical tract of th sympathetic.

DOMESTIC BIOLOGY.

AN admirable account [2] of the various small anima which are likely to interest students of domestic science ha recently been written by Miss P. Esdaile, D.Sc. The tit is a little misleading, for the book contains nothing abo vertebrates which certainly include a number of "harmf and useful animals." She deals, however, with protozo worms, insects, spiders, and mites, and describes those whi produce familiar articles (e.g., the bath sponge and th silkworm moths) and those which are pests (e.g., cockroache wood-boring beetles, clothes moths), indicating at the san time appropriate methods of control of the spread of th latter group. In small details the book is open to a fe criticisms; it is, for example, hardly correct to descril *Xenopsylla cheopis* as a "parasite" of man (p. 70) ar *Ptinus* would be easier to recognise (p. 119) if he was show sideways; the theoretical morphology on pp. 28–29 is o of place. But we know of no other book which covers ju the same ground, and it should certainly find a place in th library of every housewife who wants to understand h job; district nurses will also find it useful.

THE YEAR OF AMBROISE PARÉ'S BIRTH.

Dr. Herbert Spencer writes: In my Lloyd Rober Lecture, 1924, I stated: "As with the founder of this lectur there seems to be a doubt about the actual date of Paré birth, the years 1509, 1510, 1514, 1516, 1517, 1528 havi been given by various authors. Malgaigne, 'Œuvres cor plétes d'Ambroise Paré,' 1840, states, on the authority Bégin, that 'A. Paré was actually born in 1517.' H would thus be 73 and not 80, as usually stated, at the tin of his death." I was unable to obtain access to the eviden on which Bégin based his statement. It is to be hoped th some French medical historian will settle the date of t birth of the great reformer of surgery and midwifery.

A HOME FOR DISSEMINATED SCLEROSIS.

"PERPLEXED" writes:—I should be very grateful if a of your readers would tell me of a home which would recei a middle-aged patient of mine suffering from disseminat sclerosis. She could only afford to pay 3 or 4 guineas a wee

A CORRECTION.

Dr. SPENCER MORT writes:—A short time ago I sent communication to THE LANCET (1927, ii., 1341) on t Value of Sodium Tetra-Iodo-Phenolphthalein. . . . In was a statement that a patient had been "referred to r recently by Mr. James McClure for diagnosis and treatment Mr. McClure tells me this is not so, and at his wish I wr to ask if you will kindly insert this correction.

[1] Archives of Internal Medicine, 1928, xli., 61.

[2] Errors in School: Their Causes and Treatment. By Sir John Adams, M.A., B.Sc., LL.D., sometime Professor of Education in the University of London. University of London Press. 1927. Pp. 320. 6s.

[1] Folia Medica, 1928, xiv.

[2] Economic Biology for Students of Social Science. Part Harmful and Useful Animals. By Philippa C. Esdaile, D.S University of London Press. 1927. With 150 text-figur Pp. 175. 7s. 6d.

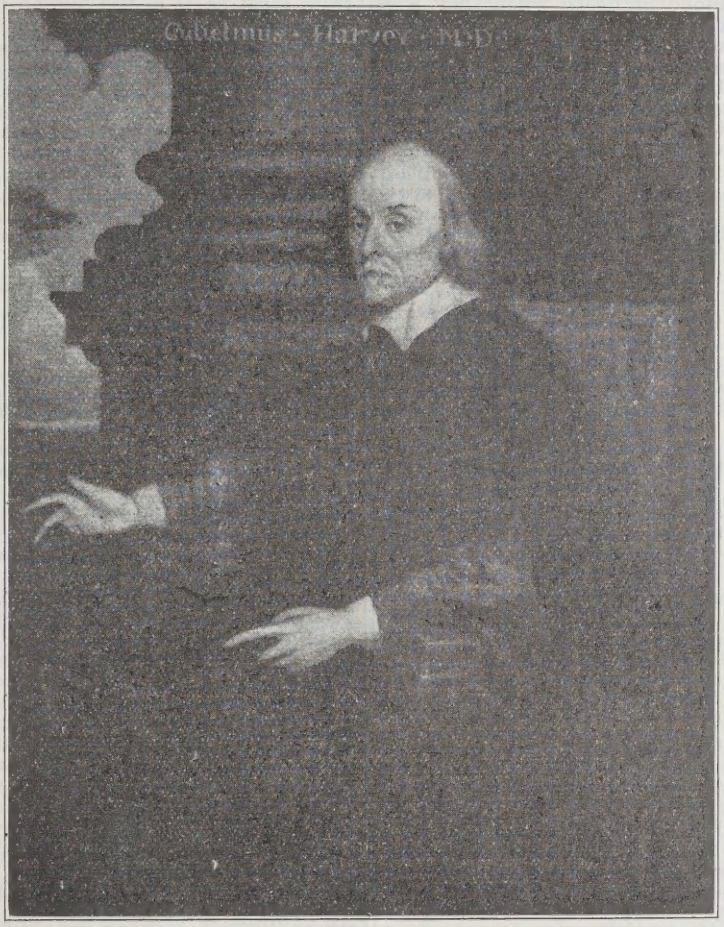
LIBRARY UNIVERSITY OF ILLINOIS URBANA

An Appreciation OF HARVEY AS ANATOMIST.

Prepared for the Harvey Tercentenary Celebration

BY SIR ARTHUR KEITH, M.D. ABERD., F.R.S., PRESIDENT, BRITISH ASSOCIATION; CONSERVATOR OF MUSEUM AND HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

To understand how any given masterpiece of art s come into existence we must have access to the udies, sketches, and ideas which preceded its execu-on. It is also so in the case of great inventions; it not the finished echanism which terests the ident of dis-very, but the rude first tempts and the perfect models the inventor. is also so in e world of bio-gical discovery; arvey's master-ece "De Motu rdis," is the ost perfect thing the annals of ological dis-very, but it is ly the com-eted picture we ve—the one ich he gave to e world—after had laboured it for a quarter a century. No-ere, unfortu-tely, does he l us what set n off on his est, nor the der of events ich convinced n that he was ht and all the st of the world ong. We may certain, I think, at his inspira-n and his first es came to him he learned to e scalpel, for-os, and probe in e pursuit of atomy.



WILLIAM HARVEY.

From the portrait belonging to the Royal College of Physicians of London.

When Harvey was studying in Padua, his aster, "the celebrated Hieronymus Fabricius of quapendente, a most skilful anatomist and venerable d man," was preparing his monograph on the valves the veins (published in 1603), and his pupils must ve had their attention concentrated on these echanical contrivances. A keen student is always tracted to subjects investigated by his teacher. bricius taught, as was accepted by all of his day, at the blood in the veins flowed outwards from e heart to the periphery and that valves had been in the walls of veins to regulate the distribution blood to dependent parts. Now, we see that at ery point of his final argument Harvey accepts the ctum of Galen—as all anatomists must still do—at Nature is the perfect contriver. "For Nature ways does that which is best," Harvey says in e passage; "Nature does nothing in vain" he writes in another; "Nature ever perfect and divine" in a third. "But is not the thing rather arranged as it is by the consummate providence of Nature?" is a question he puts to his reader. If Harvey thought thus he must have perceived that, in setting valves in the veins, with their catching edges directed towards the heart, either Nature had blundered or his teacher Fabricius had misread Nature's design. Often the young inquirer makes a flaw in his teacher's argument the point of departure for his own research, and it is probable that this was the case with Harvey. The first clue that put him on the track of his great discovery was probably his search for an explanation of those minor structures—the valves of veins. How soon he took to examining the action of valves as revealed in the distended veins of the living arm and that in life they prevented any kind of reflux, we cannot say. In this, as in all other instances, he never failed to put anatomical conjecture to the test of physiological proof. Herein we see that Harvey was that very rare kind of man—the perfect anatomist.

Long before he left Padua it must have dawned on Harvey that all was not well with the doctrine which the leading anatomist of the day taught his pupils concerning the uses of the heart and of its great vessels. If "Nature had made nothing in vain," why had such a useless structure as the right ventricle, "an apparatus of fibres, braces, and valves," been added to the heart? Why should there be placed within the heart and in the pulmonary artery and aorta contrivances which were as perfect in their mechanical action as the "clacks of a water bellows"? If the heart was, as Fabricius taught, merely a vat in which blood was concocted and vital spirits brewed, such structures were purposeless. And why should the lung require such an enormous blood-supply? Fabricius could explain none of these things and the first duty of an anatomist is to explain.

At several points of his argument Harvey makes statements which suggest that there was another and weightier reason which caused him to be dissatisfied with what Fabricius taught concerning the action of the heart. In Chapter V., and again in Chapter VI., he states that "the grand cause of doubt and error in this subject (the circulation of the blood) appears to me to have been the intimate connexion between heart and lungs." One may infer from this statement that the first real step in Harvey's discovery was a realisation of what was the exact nature of the relationship which existed between heart and lungs.

The way had been prepared for him by Servetus and Columbus; both held the heretical opinion that there were passages in the lungs by which blood passed from the right ventricle to the left. In this matter Fabricius was orthodox. He taught Harvey that the pulmonary artery supplied the lungs with nourishment and that the pulmonary veins served as pipes or passages—first, for the conveyance of air from the lungs to the left ventricle; and, secondly, for the return of fuliginous vapours from the left ventricle to the lungs. The mitral valve, Fabricius held, was designed to prevent the regurgitation of air once it had entered the left ventricle. "Good God," demanded Harvey, "how should the mitral valve prevent the regurgitation of air and not of blood?" And why, if the pulmonary veins were for the conveyance of air had they not the rigid walls of the windpipe? And why should they be filled with blood at death when they were charged with air in life? And why was it, when lungs were inflated in a living dog or in a dead man, that air never passed into the pulmonary veins and left ventricle? Fabricius could explain none of these things. Harvey could explain all if he were allowed to presume that there were "pores" in the lung by which blood could pass from pulmonary artery to pulmonary vein. Such an assumption he claimed to be legitimate, for did not everyone allow that blood percolated through liver and kidneys? If blood could pass through the dense substances of these organs why, asked Harvey, cannot it not find its way through the porous texture of the lungs?

Study of the Living Heart in Action.

All the men who taught Harvey agreed that the blood was formed in the liver, and that somehow it was conveyed from the right side of the heart to the left. The accepted opinion was that it passed by "secret pores" through the interventricular septum. "But, by Hercules!" exclaims Harvey, "no such pores can be demonstrated, nor in fact do any such exist. For the septum of the heart is of a denser and more compact structure than any portion of the body, except the bones and sinews." Harvey here again appeals to his argument from Nature. He points out that in the fœtus, where the lungs are silent in function, Nature has opened a passage whereby blood can pass direct from the right side of the heart to the left; if she had intended that blood should pass from right to left side of the heart, not through the lungs, but direct from ventricle to ventricle, she would certainly have provided an ample and unmistakable passage.

Anatomical conjecture can only give a clue to function; it can never provide the final and convincing proof. At what point of his inquiry Harvey discovered that the heart was a pump—a double pump, the right ventricle attached to the lungs and the left to the rest of the body, we do not know, but it is certain he could never have made this discovery unless he had studied the heart in action within the living body. Harvey's mode of thinking was his own but his methods of inquiry he owed to Fabricius. It was from his master that he learned to resort to embryology, to comparative physiology, and to vivisection when in search of evidence needed for the elucidation of all the problems of structure. It was to Fabricius he owed his faith in comparative physiology. What was found to be true of higher animals was certain to be directly applicable to the case of man. For Harvey, blood and spirit were one and inseparable; so were anatomy and physiology. He found the heart a mass of anatomical incongruities; by making physiology the handmaid of anatomy he was able to leave it a perfectly explained organ. Anatomy provided him with suggestions; physiology furnished him with the proofs.

Rescue of Medicine from the Demonology of Myth.

There is nothing more difficult for us moderns than to feel a pulse with the finger of a pre-Harveian physician. Under his finger the artery expanded of itself, drawing in blood, spirits, air and vapours of all sorts and squeezing them out again as it contracted. We feel only Harvey's stroke of the heart—the arterial distending as "when a bladder is filled." We see the patient's body as a great capillary field, uniting arteries and veins—a field of whose existence Harvey knew nothing save by inference. We think in terms of oxygen, carbon dioxide, and combustion; even Harvey had to content himself with "vital spirits," "fuliginous vapours," and "innate heat." To the pre-Harveian physician the human body was a realm dominated by a cosmogony of spirits; Harvey's greatest service to medicine was not the discovery of the circulation, but his rescue of medicine from the demonology of myth. As his method of inquiry came into fashion spirits became more and more obsolete and less and less used by anatomists for the purpose of explanation. The spirit myth has now departed from most parts of the human body, save the brain where it still lingers.

Even Harvey himself was clearly staggered by one aspect of his discovery. When he had measured the capacity of the left ventricle and calculated its output, the amount seemed to him unnecessarily great. He found that in half an hour, with the heart beating 70 to the minute and only throwing out half an ounce at each stroke, that more than eight gallons of blood would have circled round the body. If blood was merely for the nourishment of tissues why was so much needed? Harvey supposed that such rapid circulation was needed to keep tissues supplied with heat and vital spirits, and that the blood would congeal and thicken if not kept in active movement. More than a century after Harvey's death vital spirits were replaced by oxygen.

Harvey and Darwin.

There is a very remarkable parallel between the discoveries of Harvey and of Darwin—although the two men represent very different physical types of Englishmen. Both put forward a hypothesis to explain an enormous number of biological facts—the one to prove the truth of the circulation, the other to prove the truth of evolution. Before Harvey other men had thought of circulation of the blood, and before Darwin there had been many evolutionists. But whereas the efforts of their predecessors had been tentative and not fully convincing, so overwhelming was the proof they brought forward in support of their contentions that the resistance of men's minds was overborn and what had been heterodox became suddenly orthodox. Both Harvey and Darwin began by conjecture and ended by resorting to experimental proof. In both cases a large presumption had to be made; Harvey had to presume that passages existed between arteries and veins throughout the body; Darwin had to presume that there was a biological process by which the specific characters of any kind of living thing could be altered so that a new species was produced. Such presumptions had to be made by both men; only by making them could all the facts be explained. Within three years Malpighi saw through his microscope the passages which Harvey had seen only by the eye of faith; but although Darwin has been dead these 44 years, his Malpighi has not yet made his appearance. Some day he, too, will arrive.

THE LATE DR. T. D. NICHOLSON.—After a short illness, Dr. Thomas Dryden Nicholson died at Brampton near Penrith, on April 29th. Sixty-four years of age, he was a Cumberland man and was educated at Blencowe Grammar School. His medical studies were pursued at the University of Edinburgh, and he graduated there M.B. in 1890. After several years spent at Bolton-le-Dearne, in Yorkshire, he settled in 1899 at Shap, where for 21 years he carried on a practice covering a wide and thinly populated area. Not only as medical officer and practitioner but also as a public-spirited and active worker in many causes, he was well known throughout the district, and in 1912, he was appointed a magistrate for the county. About seven years ago Dr. Nicholson moved to Brampton. He leaves a widow with two sons and two daughters.

THE COST TO THE COUNTRY OF INDUSTRIAL RHEUMATISM.*

By Sir WALTER S. KINNEAR, K.B.E.,
CONTROLLER OF HEALTH AND PENSIONS INSURANCE, MINISTRY OF HEALTH.

THAT rheumatism has long occupied a large place in the nation's burden of sickness is a matter of common knowledge, and probably even persons unaccustomed to the study of public health questions would not be surprised to learn that a conference has been convened for the discussion solely of rheumatism in its various forms. What has probably been a matter for surprise, even to persons with expert knowledge of the subject, is the extent of the invalidity now known to follow from rheumatic disease, as evidenced by the data which have become available during the last few years. Rheumatism, it was recently been remarked, is now a social as well as a medical question, and the setting apart of a section of this conference for the discussion of its social aspects implies recognition of this fact.

The health insurance system has been of value in adding to our information as to the extent of the prevalence of rheumatism. In 1921 an investigation was made consisting of an examination of a section of the records of 226 insurance practitioners having between them some 400,000 insured persons on their lists, with a view to ascertaining the relative frequency with which insured persons consult their doctors for a number of illnesses, classified in broad groups. In a list of 15 "diseases" causing insured persons to consult their doctors rheumatic complaints came third in order, the number of cases per 1000 illnesses of the most common diseases being: bronchitis, &c., 213; digestive system, 131; rheumatism, lumbago, &c., 88.

The Incidence of Rheumatic Diseases.

Of most value in relation to the subject now under discussion, however, is the report of the Ministry's Committee on the Incidence of Rheumatic Diseases published in 1924. This report is based upon a detailed examination of the illnesses of a rheumatic character during 1922 among all insured persons on the carefully recorded lists of 49 insurance practitioners. The number of insured persons on such lists was approximately 58,000 males and 33,000 females—i.e., 91,000 in all. The number of rheumatic cases among the illnesses recorded in the year was 2510, of which 1771 related to males and 739 to females. With the aid of the material derived from this small but valuable sample the Committee estimated, broadly, the proportion of sickness due to rheumatism among the insured population and the cost of this sickness in health insurance benefit. Having regard to the fact that the insured population numbers over 15,000,000 persons and includes practically all the wage-earning classes between the ages of 16 and 65 (until this year between 16 and 70), it may be said to approximate closely to the mass of industrial workers of the country. Accordingly I propose to estimate the cost to the country of industrial rheumatism by applying the conclusions of the Committee to the most recent sickness experience of insured persons in Great Britain which is available—viz., that for 1927. It must be kept in mind, however, that the figures which I shall presently give relate only to the insured wage-earners. It is to be regretted that they do not cover the invalidity of wives or non-wage-earning dependents of insured persons, nor that of men and women over the age of 70.

It must be remembered that the Committee's estimate of the amount of invalidity due to rheumatism must be accepted with one important reservation. With the object, quite properly, of excluding any sickness as to the origin of which there was any element of doubt, the Committee, unless arthritic or fibrositic symptoms were present, took no account of chronic heart disease, of which it is estimated that at least one-half is rheumatic in origin. We are told in the Ministry's recent report on Acute Rheumatism in Children, published in May, 1927, that probably not less than 40 per cent. of all deaths from heart disease have their origin in acute rheumatism and two-thirds of the acute rheumatic infections which ultimately cause those deaths are contracted in the period of childhood, 5 to 15 years. The Committee, being concerned with the insured population (i.e., at that time persons between 16 and 70), would have no cognizance of cases diagnosed in the period under review as "heart affections," and thus some portion of the total invalidity due primarily to rheumatism has doubtless escaped observation.

Rheumatic Diseases in Various Age-groups.

Some idea of the extent to which the factor of age enters into the question of rheumatism can be obtained from the following comparison in the Committee's report of sickness per annum due to all rheumatic diseases per 100 insured persons in each age-group (Table I.).

TABLE I.

Age-group.	Days of sickness per annum per 100 insured persons in each age-group. All rheumatic diseases.	
	Males.	Females.
16 to 24	27	58
25 to 34	30	74
35 to 44	95	124
45 to 54	243	390
55 to 64	457	1026
65 and over	2007	3190

The division of these figures into three broad disease-groups (Table II.) is still more illuminating.

TABLE II.

Group A.—Acute and subacute rheumatism.
" B.—Non-articular rheumatism.
" C.—Chronic joint diseases.

Age-group.	Days of sickness per annum per 100 insured persons in each age-group. All rheumatic diseases.					
	Males.			Females.		
	A	B	C	A	B	C
16 to 24	20	5	2	41	8	9
25 to 34	12	13	5	28	9	37
35 to 44	24	32	39	24	51	49
45 to 54	34	74	135	57	107	226
55 to 64	22	148	287	71	252	703
65 and over	51	593	1363	139	790	2261

It is to be noted that the amount of sickness due to acute and subacute rheumatism (Group A), while being comparatively heavy at the youngest ages, and costing the insurance funds a large sum of money because it affects the most numerous section of the industrial population, is much lighter than that due to other forms of the disease at all ages over about 40. Sickness due to non-articular rheumatism (Group B) increases quite substantially with age, while that due to chronic joint diseases (Group C) increases in a most marked manner.

TABLE III.

Group.	Men.	Women.
A. Acute and subacute rheumatism	14 per cent.	24 per cent.
B. Non-articular rheumatism ..	32 "	23 "
C. Chronic Diseases	54 "	53 "

The relative prevalence of the various groups of rheumatic diseases for insured persons in each sex can be seen from Table III.

* Communicated to the Bath Conference on Rheumatic Diseases.

Sickness and Disablement Benefit due to Rheumatic Disease.

One of the most interesting conclusions of the Committee, and one to which I desire to direct your especial attention, is to the effect that in the year under observation approximately one-sixth of the total period for which sickness and disablement benefit was paid to men was due to rheumatic diseases. The corresponding figure for women was one-seventh. An examination of the records of certain individual approved societies produced an almost similar result. Since 1922, however, the amount of invalidity under the National Health Insurance Act has risen, the increase being more marked in the case of disablement benefit (i.e., illnesses with a duration exceeding six months) than in the case of sickness benefit (i.e., first six months of illness). It may be that, with the increase in the proportion of protracted sickness, the portion of the total attributable to rheumatism is now a little different from what it was in 1922.

Estimated Cost of Rheumatism in 1927.

It is probable, however, that these two fractions, one-sixth (men) and one-seventh (women) are still sufficiently accurate for my broad estimate of the cost of industrial rheumatism. In 1927 the total sickness and disablement benefit payments made by approved societies in England, Scotland, and Wales amounted to about £20,000,000. This represented about 34 million weeks of incapacity for which benefit was paid. If due allowance be made for incapacity occurring in the initial period of sickness, when no benefit is payable (i.e., the waiting days), it is probable that the total incapacity amounted to about 35 million weeks, the proportion due to rheumatism being about 5½ million weeks. The corresponding cost of medical services and the administration of insurance committees and approved societies in 1927 was about £14,000,000. If we allocate something over one-half of the cost of administering approved societies to the supervision of sickness and disablement benefits, and if, further, we take a fraction a little under one-sixth (to allow for women) and apply the result to both sickness and disablement we arrive at a figure of a little over £5,000,000 as the approximate disbursements made under the national health insurance scheme in Great Britain during 1927 on account of rheumatism.

If to the foregoing we add the amount of wages lost to insured persons through rheumatism on the basis of an average wage of from 50*s*. to 55*s*. per week (man) and from 25*s*. to 30*s*. per week (woman) the £5,000,000 requires to be increased by about £12,000,000, making a total of £17,000,000 in all. This vast sum then represents approximately the yearly disbursements under the national health insurance scheme to insured persons on account of rheumatism together with the accompanying loss of wages. It does not include any sum for the cost of the medical treatment of persons suffering from rheumatism who are not totally incapable of work, of the cost of nursing in bad cases, nor does it take account of the cost of any necessary institutional treatment. Further, it does not cover fully persons over the age of 70, the relative cost in respect of whom must be heavy in view of the rapid increase in the severity of the disease with age, nor does it make any allowance for dependents of insured persons, all of which, if it were possible, should be taken into account in assessing the cost of rheumatism to the country.

Conclusion.

This necessarily brief survey of the cost to the country of industrial rheumatism will, I trust, enable the Conference to gain a fuller realisation of the extent of the invalidity now known to be definitely traceable to rheumatism, and will, I hope, result in a further stimulus being imparted to the efforts which are being made to investigate its causation and methods of treatment, with a view to ameliorating the disquieting incidence of the disease.

THE "RHEUMATIC DISEASE."*

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AMONG the heterogeneous collection of condition grouped together as rheumatic, there is one clinica type which seems to us to possess characteristi features, and which we believe to be an independen disease entirely distinct from such other acute join lesions as may be produced by gout, infective arthriti or chronic rheumatic conditions. This is acut articular rheumatism, characterised by lesions of th joints, multiple, shifting, and transitory, which subsid without leaving any trace, and cardiac manifestation which, on the other hand, persist, become permanen and chronic. This acute polyarthritis is called i France acute articular rheumatism, the rheumati disease or Bouillaud's disease, after the great Frenc clinician who identified it in 1840.

Though the symptomatology of acute articula rheumatism and its cardiac manifestations are we known, we are still unacquainted with its ætiology The infective origin of the condition appears certain but it has not yet been possible to demonstrate th specific pathogenicity of any bacterium or mor complex parasite. A certain number of physician still consider that the disease only develops in particular soil—viz., the arthritic diathesis. Sinc bacteriological evidence has proved inconclusive, w have, during the last few years, attempted to invest gate the true nature of the disease by grouping a the available information on its ætiology, symptom tology, and complications.

Acute Articular Rheumatism and Arthritism.

It seems to us right to refuse to accept any connexio between acute articular rheumatism (Bouillaud disease) and the arthritic diathesis. The relationshi which has been ascribed to acute articular rheumatism applies in our opinion to polyarthritic conditions whic are really gouty in origin, due either to true gout o its atypical forms.

In 84 patients carefully studied from this aspec we only found one case in which the father of th patient was asthmatic, and the mother suffere from migraine; in all the other cases the disea supervened in subjects in whom there was no persona or hereditary evidence of the arthritic diathesis Chronic rheumatism, gall-stones, gout, diabete eczema, hæmorrhoids are exceptional in person affected with acute articular rheumatism. Beside this disease affects the hospital class of patients rathe than the private class, and it is among the latter tha the arthritic diathesis is much more prevalent.

If gout is the disease of the rich, *morbus dominum* Bouillaud's rheumatic disease afflicts on the contrary a social classes, but mainly the working classes and th poor.

Infectivity of Acute Articular Rheumatism.

The infectivity of acute articular rheumatism wa recognised by Stoll, Lanceraux, Thoressen, Feldkamp and Friedland. Chomel, Hirsch, and Lange (o Copenhagen) have described definite epidemics, d la Harpe described an epidemic at Lausanne in 184(Lebert one at Zurich in 1857, and Warrentrap one a Frankfort in 1865. Mantle, Edlefsen (at Keil), an Sweifel described epidemics in houses or road Ch. Fies found evidence at Oyonnax that rheumatism like tuberculosis affected certain dwellings. Th subject has been reconsidered in the light of abundan statistics by St. Lawrence and Faulkner and White.

According to St. Lawrence, in 50 per cent. of the famili of rheumatic patients two or more persons affected wit

* Communicated to the Bath Conference on Rheumat Diseases.

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neumatism can be found; of 480 persons exposed to the nfection, 14·8 per cent. were found to be affected; this roportion is higher than that observed in tuberculosis. he frequent occurrence of rheumatic heart disease is enerally recognised; thus, in 22 families out of 50 examined y this author two members were affected with cardiac isease, in five families three members, and in two families our members—i.e., in 29 families out of a total of 50, two r more members were affected with heart disease. Of the 80 persons exposed to the infection 38 had a cardiac lesion, aking 8 per cent., which is a much higher incidence than n the general population among whom the incidence is sually estimated at 1–2 per cent. According to St. awrence the familial incidence of acute articular rheumaism is higher than that of tuberculosis. Faulkner and Vhite have also reached analogous conclusions. Studying 1 families of rheumatic patients they found that in 35·5 er cent. of the cases more than one member of the family ere affected; of 1235 persons exposed to the infection, 79 per cent. were attacked.

During the discussion which followed the publiation of these results, Wilson stated that he had ound that 40 per cent. of the patients affected with neumatism were the children of rheumatic persons, nd that in 28 per cent. of the cases their brothers and sters were also affected with the rheumatic disease. Ve, on our part, before we knew of this research, had ttempted to obtain similar statistics. As a matter f fact, simple questioning will often fail to elicit hether the joint lesions described in the history are uly rheumatic or whether they are merely painful onditions which have nothing in common with this isease, except that they affect the joints. But among ll joint diseases, acute articular rheumatism is disnguished by its affinity for the heart. It is, therefore, the frequency of heart disease in the families of ur patients that we have attempted to ascertain.

In 23 families of rheumatic patients whose histories e have been able to obtain, there was no evidence of rdiac disease in the parents or collaterals; it occurred, owever, in seven other cases—i.e., in 30 per cent. of our atients. Twice the mother was suffering from chronic alvular endocarditis, twice the father, once the sister, nd once the grandfather and grandmother, and once ther, mother, and a brother and sister; the familial nature f the disease was particularly evident in this case.

Entourage of Rheumatic Patients.

Thus, our statistical results are lower than those f St. Lawrence, but comparable with those of aulkner and White. It seems to us, however, that n the families of persons free from rheumatism, acute rticular rheumatism and valvular heart disease are uch more frequent than these authors state. We xamined from this point of view the families of 3 non-rheumatic individuals chosen at random om the in-patients suffering from acute diseases n our department of the Boucicaut Hospital. In 3 of these cases there was no rheumatism or cardiac isease in the ascendants, collaterals or descendants. n the other hand, in six cases—i.e., 17 per cent.—he existence of the rheumatic disease was most robably present in the immediate family of these on-rheumatic patients. Thus, in the entourage f rheumatic patients the incidence is approximately vice as great as in the non-rheumatic. The conagiousness of the rheumatic disease is therefore istinct; it is no way comparable to the exanthemata f certain severe pyrexias. It is, besides, exceptional or the evidence of contagion to be present at the me of the crisis in acute articular rheumatism; acute rticular attacks are never observed to arise from an bvious source of infection in the same family.

In fact, if one keeps to the usual methods, the ifectivity of acute articular rheumatism is not ident. But that of tuberculosis is no more obvious only direct contagion is considered. The infectivity f tuberculosis could not be proved until the tuberulosis attacks of adolescence and adult life were cognised as a lighting up of an infection caught uring infancy when family contagion could be clearly emonstrated. The fact that obscures the rheumatic roblem from an ætiological and a general point of iew is the excessive emphasis on the articular manistations, though these as we shall see in the sequel ly constitute an episode in the course of the disease.

No one thinks of tuberculosis pleurisy as being infectious; the tuberculosis is the condition which is infectious. A similar difficulty arises when the infectivity of cerebro-spinal meningitis is considered; only rarely does the infection spread from one case of meningitis to another; but it becomes evident when the initial rhinopharyngitis is considered and when the rôle of germ-carriers in dissemination of the disease is recognised.

It is not certain that definite infectivity is associated with the acute stage of the rheumatic disease. In a hospital ward, patients occupying beds next to a rheumatic patient are never observed to become rheumatic; but it may well be asked whether this infectiousness is not less direct and earlier, whether it is not present some time before the paroxysmal crisis which constitutes the attack of acute articular rheumatism.

The Rheumatic Disease, a Chronic Cardiac Disease with Successive Attacks Affecting the Serous System.

Even those authors who acknowledge the importance of the cardiac lesions which occur during the course of rheumatism, tend to regard them as secondary and to consider acute articular rheumatism, Bouillaud's disease, as primarily a polyarthritis, a disease of the joints. Pediatricians have been struck with the frequency of definite joint lesions during childhood, and the importance of the cardiac lesions. It seems to us that the general point of view in regard to rheumatism should be completely changed, and that we should not consider the disease as consisting of a series of acute lesions, first articular and later cardiac, but rather as a true chronic disease, similar to tuberculosis, syphilis, or malaria, particularly the first of these diseases.

The chronic disease, tuberculosis, may rémain almost entirely latent for many years, developing slowly and only becoming evident at certain times by acute attacks, such as an acute attack of pleurisy which may subside or heal. Thus it happens that caught in infancy and generally in the family surroundings, the signs of the disease often remain unrecognised until the time when the disease is definitely revealed as phthisis. Similarly, the rheumatic disease, or Bouillaud's disease, seems to us to be a chronic disease. The articular lesions appear the most important only because of their painful nature, which prevents them from passing unnoticed. The endopericarditis is really much more important, and this after a period of development readily becomes obscured again until a definite cardiopathy is established which leads to cardiac irregularity.

We think that in Bouillaud's disease the reservoir of the rheumatic virus is the heart, the endocardium, the pericardium, and particularly the myocardium. The acute attacks are distinguished either by a recrudescence of the cardiac lesion or by fresh articular symptoms. This method of interpreting the fundamental part played by the heart is the only way of explaining the development of the disease, which frequently after a stage during which articular and cardiac signs are present simultaneously, progresses with cardiac signs only, becoming more and more severe. The appearanee of these cardiac signs, accompanied by pyrexia (inflammatory irregularity of Bard, febrile irregularity of Josue), shows clearly the infective nature of the condition, and that it is not purely mechanical as was at one time supposed. The simultaneous occurrence of some joint lesions during the course of these febrile cardiac attacks demonstrates beyond dispute in some cases their rheumatic nature.

The idea of progressive cardiac rheumatism, introduced during recent years into pathology by Ribierre and his pupil Pichon, takes full account of the importance of rheumatic heart disease, which, far from being a complication as formerly believed, is really the most important part of the disease. The pathological anatomy shows well to what type of affection rheumatism belongs. Though in the joints the lesions appear to be congestive, inflammatory, and transitory, so that the disease resembles the acute inflammations, a study of rheumatic endo-

pericarditis shows that the pathological process really differs from these acute lesions, and rather resembles the subacute inflammations with a tendency to chronicity, such as are induced by the higher organisms, for instance, the parasite of tuberculosis or that of syphilis.

Scarring, not Ulceration.

The fact that the main ætiological factor in acute articular rheumatism does not produce vegetations and ulceration like the gonococcus or the pyogenic organisms, but warty nodules, scarring, and stenoses instead, shows its relationship to tuberculosis and syphilis, both diseases characterised by scarring and fibrosis. Is not the resemblance between rheumatic and tuberculous cardiac disease striking? The state of myocardium shows that it is probably the most important lodging-place of the rheumatic virus. Clinical experience reveals more and more the part played by the myocardium in rheumatic carditis. We have helped to emphasise the great clinical importance of these facts, which are, moreover, nowadays generally recognised by the Paris medical faculty.

In addition, the pathological histology shows, as we have seen with Prof. Letulle, a special type of reaction to which Aschoff's work has drawn attention adjoining the sclerotic myocarditis. We have with Prof. Letulle taken account of these interesting Aschoff's nodules, but we found it difficult to make of them true infective nodules comparable to tuberculosis; they represent rather inflammatory nodules with separation of muscle cells which ultimately come to resemble giant cells. Subacute nodular rheumatic myocarditis appears to us to be a specific lesion. In the whole organism, Aschoff's nodules symbolise defective defence on the part of the connective-vascular tissues against attack by the rheumatic virus. In the thickness of the myocardium this nodular inflammation is completed, or rather complicated, by a giant-cell proliferation of the striated muscle cells (muscular giant-cells) following the separation of the myoblastic elements. Atrophic disintegration of all the constituent elements of the myocardium is a later stage in the development of the myocarditis nodule. Finally, the last stage of all these inflammatory changes is represented by scarring (first soft, later hard).

The fibrous strands which thus ultimately separate the myocardial bundles appear to form a particularly favourable site for fresh nodular foci. One might say that the "rheumatogenous" organisms have a particular affinity for cicatricial (fibrous) tissue. The same predilection is shown for the depth of the thickened epicardium and for the fibrous pericardial adhesions. Possibly the same applies to the deeper parts of the thickened scarred endocardium and rheumatic valvular lesions. The presence of numerous acute and subacute nodular foci of different ages in the midst of sclerotic patches in the heart requires an explanation considering its great frequency. It is not sufficient to say that the rheumatic virus prefers the middle of inflammatory cicatrices; one must suppose that it lodges there, and that the repeated exacerbations originate here whatever the interval between them.

Infective Forms of Acute Articular Rheumatism.

Though in the classical types of this rheumatic disease the pyrexia and general symptoms accord with the severity of the joint lesions and the diagnosis is consequently easy, this is not always the case. In certain types which we have studied, joint symptoms are absent or slight, and a temperature approaching 40° C. (=104° F.), headache, severe general symptoms, general malaise, agitation, delirium, torpor make one think of typhoid or a generalised septicæmia, or if signs of endocarditis are present of an infective endocarditis. If there are, on the other hand, pulmonary or pleuro-pulmonary signs, as we have many times observed, one thinks, in view of the severity of the symptoms, of pneumonia; these phenomena are, however, related to the rheumatic disease, and subside with its specific treatment. In all these cases the knowledge of an attack of acute articular rheumatism in the past, or the occurrence, often late, of a few, scattered joint signs, makes on think of rheumatic disease and administer appropriat treatment.

The knowledge of the existence of infective form of this rheumatic disease should be generally recog nised. The physician should know that, beside th classical form in which joint symptoms predominat there are progressive cardiac forms in which the hear affection dominates the picture. There are form which are essentially infective in appearance in whic the signs of generalised infection prevail, and in whic the arthropathy is apparently accessory and ofte of late occurrence.

The Blood in Acute Articular Rheumatism.

The general view since the time of Garrod, Malasse and Hayem has been that acute articular rheumatisi is a disease which produces a diminution in th number of red blood corpuscles. Nevertheless, seems to us that however important the diminutio in red cells may often be in rheumatic patients, th pallor, which is so obvious in these patients, is n always due to this cause. These patients are mo often pale "ochro-dermic" subjects rather tha anæmic in the true etymological sense of the wor We have proved by our examinations that an obviou diminution of red corpuscles is often absent durir the acute stage in these rheumatic patients.

With regard to the white cell count there is oft at the time of the acute attack some leucocytos which is generally associated with an increase in th percentage of the polynuclear elements. In th uncomplicated cases of average severity the whi cell count is generally 13,000 to 16,000 per centimetr and the percentage of polynuclear neutrophils 75–8 In the milder forms the polynuclear increa is absent, and only a slight leucocytosis is observe This leucocytosis is absent, however, in those cas which are not accompanied by inflammatory reactio Entire disappearance of polynuclear eosinophils not observed during the acute attacks of rheumat disease, except possibly in the very early stages. Th rheumatic leucocytosis and polynucleosis do n continue as long as the acute phase of the attack they disappear when the inflammatory sympton of which they are but a sign subside. The transie mononucleosis may be equally important since th number of mononuclear cells may amount to 50– per cent. of the total white cell count.

We have, besides, asked ourselves whether the o ideas of the acidity of the blood in acute articular rhe matism conforms to the modern conception of ion acidity expressed in terms of pH and alkali reserve.

In rheumatic cases we have never been able detect the least disturbance which might point to a alteration in the reaction of the humoral mediu We have investigated the problem by numero methods, by estimating the pH and the alkali reser of the blood and the pH of the urine, the amount phosphoric acid in the urine, and by other metho The blood pH and the alkali reserve are normal rheumatic patients. In these the ionic acidity the urine also remains normal.

On the other hand, the amount of fibrin in t blood is increased in acute articular rheumatisi In fact, in patients with rheumatism or pneumon we have found the highest values of fibrin in t blood. In pneumonia values of 10 or 12 g. of fibr or more per litre of plasma may be recorded (in patient with serous para-pneumonic pleurisy, whi rapidly become purulent, we have observed as mu as 16 g. per litre of plasma); in acute articul rheumatism the value frequently reaches and excee 10 g. per litre. But the increase in fibrin in the blo is of no value for the differential diagnosis of articul lesions. Though rheumatic hyperfibrinosis is of diagnostic significance it has some prognostic valu It is, in fact, proportional to the severity of the acu joint lesions. In the obviously inflammatory cases it m reach 9, 10, or 12 g., in the milder forms it does n exceed 6·76, 5·22, and 4·20 g. The more severe the acu joint lesions, the higher the fibrin content of the bloc

If the development of the hyperfibrinosis is followed a number of patients, as we have done, one finds at far from disappearing under the influences of icylate treatment at the same time as the pyrexia d the painful symptoms, it continues for a long ne after the joint symptoms have subsided. When e temperature has returned to normal and the ins have entirely disappeared, when the administion of salicylates in reduced doses is continued as imple precautionary measure, some hyperfibrinosis nains as evidence that the inflammatory process ll persists. As long as the fibrin value of the blood s not returned to normal or subnormal it is advisable continue the administration of salicylates.

Treatment of Acute Articular Rheumatism.

Our conception of acute articular rheumatism is t merely of academic interest; it readily suggests as of prophylaxis, analogous to those of tuberosis, which would deprecate the association in the nily of young children and patients suffering from ute attacks; this is as yet purely hypothetical. t it follows from our conception that treatment rheumatism should be continued for some time er acute attacks have subsided by rest and the ministration of salicylates; some clinicians even vocate treatment between the attacks with small ses or medium-sized doses of sodium salicylate. We not insist too strongly on the importance of the se from this point of view, and the value of using intravenous route in resistant cases, combining a xture of sodium salicylate and glucose and using ficiently dilute solutions.

We generally use a mixture in which 5 per cent. sodium salicylate is dissolved in a 10 per cent. ution of glucose. The effect of sodium salicylate the development of rheumatic endocarditis is l under discussion. Has the drug which is so ective in the articular attack the same effect in the ute cardiac attack? This is a question on which is difficult to form a definite opinion, and it still nains in the region of hypothesis.

Finally, the idea of the chronicity of Bouillaud's ease (acute articular rheumatism) gives us a ans of explaining the beneficial effects of certain rmal waters which appear to help to relieve some gering joint symptoms, and to mitigate some types progressive and prolonged cardiac rheumatism. In nce some indeterminate and radio-active waters, h as Bourbon-Lancy, Plombières, and Neris, pear to have a beneficial effect on persistent umatic attacks; in the acute forms of articular umatism they should be avoided, as should alkaline ters and muds; these have a place on the other nd in the treatment of the other kinds of joint on, which, we emphasise in conclusion, have hing in common with acute articular rheumatism ept the term "rheumatic."

THE INFLUENCE OF ENVIRONMENT ON RHEUMATIC INFECTION IN CHILDHOOD.*

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AMONG the present-day problems of juvenile umatism there is, in my opinion, none worthier our accurate study than that of the influence of vironment on the large scale production of the ease. My reason for insisting on the pre-eminence this particular question is that, as the position pears to-day, in our efforts to prevent and control disease in this country, we have a better chance success by getting to work on environmental uences than by any other means. With whatever readiness public and private funds may be forthcoming for the relief of the child-victims of rheumatism, it is its prevention which demands our hardest thought and greatest effort.

My subject naturally divides itself under two chief headings: first, the evidence that environment is an important predisposing cause of juvenile rheumatism; secondly, the nature of the environmental factors at work.

Before I pass on to these two questions I want to spend a moment in considering with some precision what it is that we have in mind when we speak of a disease as being "produced by" some fault of environment. Clearly, in the case of an infective disease, we cannot regard environment as the "cause" in any strict sense; but we may think of it as leading to increased virulence in the bacterial agent, to a diminished resistance in the patient, or to the development of some abnormal condition which, in its turn, acts as a preliminary to the infection in question. Thus, in the case of juvenile rheumatism, environment might act by increasing the activity or dosage of the infecting micro-organism, or by diminishing the child's resistance to the rheumatic infection, while it might also play an important rôle in the production of the disease, were it to predispose towards the occurrence or persistence of tonsillar infection.

But for myself I do not doubt that environment also works more frequently and more powerfully in another way—namely, not so much towards originating the infection as by stimulating and unmasking an infection already latent, turning it from a mild to a severe attack. Now if this is so in the case of juvenile rheumatism, obviously it is of great importance, for it means that environment is specially concerned in the production of rheumatic heart disease.

There is one further preliminary point to be considered. In thinking out the ways in which environment may be conceived to predispose towards an infection, it is difficult to get away from the idea of its influence being at work on some micro-organism external to the patient, lurking ready to attack and infect him. But what if the modern conception of the bacteriology of rheumatic infection is correct, that the infecting agent is a constant inhabitant of the human alimentary tract which becomes exalted in virulence, assumes a pathogenic rôle, and so produces the disease? In such a case we must be prepared to find that environment plays a part different in detail from what we are accustomed to observe.

Juvenile Rheumatism an Environmental Disease.

The first question which I have to discuss is this: Is there evidence that environment plays an important part in the production of juvenile rheumatism?

Considered as a widespread endemic disease of this country, juvenile rheumatism shows one outstanding feature—namely, that it is massed amongst the children of the poor, and practically absent from the children of the well-to-do. I need not to-day produce figures to prove the truth of this statement, which is, I think, universally accepted. We need no better proof of it than the fact that the ordinary educated layman has still no idea that rheumatism is a common, or indeed possible, disease of children. He is quite unfamiliar with it in the families of his friends and relatives.

This class incidence is so clear that it is evident that we cannot hope to understand the large scale production of the disease until we know the explanation of it. Prominent among the possible explanations comes, of course, the influence of environment. Have we any direct evidence that this is the correct explanation? We have one very strong and simple piece of evidence: I allude to the investigation published in the Medical Research Council's Report into the incidence of rheumatism in poor-law residential schools. Four schools, housing about 1800 children, who all came from the poorer classes, were examined over a number of years. Left in their own homes it is impossible not to suppose that dozens

* Communicated to the Bath Conference on Rheumatic Diseases.

of instances of rheumatism would have arisen amongst them; yet transferred to the residential schools they remain practically free of the infection. On this single piece of evidence alone we may confidently base the opinion that juvenile rheumatism is essentially an environmental disease. There are, of course, many other confirmatory proofs of this view.

There are other possible explanations of the freedom from rheumatism enjoyed by the children of the richer classes, such as contagion, heredity, and diathesis. Heredity and diathesis are hardly within my subject, so that I will only say that the evidence just quoted from the residential poor-law schools makes it quite clear that they cannot be factors of great moment. Contagion falls within the scope of environment, and I must digress to consider it.

Contagion.—The question, then, can be put thus: How far is the mass production of rheumatism amongst the children of the poor due to case-to-case infection?

We may be confident that in the healthy surroundings of a hospital ward rheumatic infection does not spread from one child to another; can we be equally sure that in the unhealthy homes of the poor this does not occur? I think we can. The theory of contagion has no sort of supporting tradition behind it among clinical workers at rheumatic problems. The investigations of the Medical Research Council's Report were specially undertaken with a view of testing this theory, but no evidence in its favour could be found. Further, spread by contagion could not explain the class incidence of the disease when that is considered accurately, as we shall see later; and it is not in agreement with the modern bacteriological conception of rheumatic infection. If this last is true we must liken rheumatism to such infections as lobar pneumonia and appendicitis rather than to diseases due to imported organisms such as tuberculosis. Now everyone has seen cases of pneumonia or appendicitis arise in more than one member of a family synchronously or close together, but does anyone think that contagion accounts for the thousands of cases of these diseases which occur?

The theory that juvenile rheumatism spreads by case-to-case infection has its most doughty champion in A. C. F. Halford, of Brisbane, and we cannot deny that where an infective disease is common and is massed in one section of the community, many of its ætiological factors will appear consistent with a possible contagious spread; but to allow that such a method of infection accounts for the huge numbers of rheumatic cases which we find in this country would, I am sure, be absolutely wrong. Were contagion at the botton of it all I am convinced that we should have known it long ago.

Conclusion.—To sum up, therefore, the general question of the influence of environment on juvenile rheumatism, we may regard this influence as so powerful that it is fair to regard the rheumatism of childhood as an environmental disease. In saying this I think I am supported by the general trend of medical opinion in England.

The Environmental Factors in Juvenile Rheumatic Infection.

I pass now to discuss the nature of the various environmental factors which aid and abet the production of juvenile rheumatism. As a preliminary I should like to suggest that so close is the association between juvenile rheumatism and tonsillar disease, that it seems as though the environmental factors at work must, to some extent, centre round the production of diseased, infected tonsils; and in saying this I have not at all in mind the too familiar child with enlarged tonsils and adenoids: I do not fear contradiction when I say that this is not the type which provides the bulk of rheumatic children. And here I may digress to say that in my view one of the reasons of the immunity to rheumatism found amongst rich children is the present-day practice of early and complete removal of diseased tonsils. When we remember that 70 per cent. of the boys now joining Eton College have already had their tons removed (W. Attlee), we see that the numbers a large enough to make a difference between the ri and the poor.

Climatic and Seasonal Influences.—Passing ov many interesting points in connexion with t climatic and seasonal incidence influences on t production of juvenile rheumatism, I will conte myself with saying that the world distribution the disease and its seasonal incidence in this count both suggest strongly that a combination of dar and cold predisposes to it.

Poverty.—I come now to the all-important influen of poverty. It is clear that were there no pover there would be practically no rheumatism proble in children; but the question arises: Is the massi of juvenile rheumatism amongst the poor due their poverty per se or to some other factor, concomitant of poverty?

I have already spoken of the remarkable freed from the disease enjoyed by the children of t rich. The rheumatic stratum of society has, therefo an upper limit, and consideration of the incidence heart disease in secondary schools suggests that t limit runs at, or perhaps a little above, the gra attending the State elementary schools.

Yet it is probably not correct to regard juven rheumatism as a "poverty disease," for there evidence that its frequency does not increase as t lower depths are reached. This was pointed out F. S. Langmead as long ago as 1910, and has be repeatedly confirmed by nearly all who ha investigated the matter. A. P. Thomson, who l made a very long and careful inquiry into this po in Birmingham, finds the same fact, and further th the rheumatism map of that city does not accurat correspond with the poverty map. The same cl incidence has been found by V. Coates and R. Thomas in Bath, by J. Morrison in Bristol, by R. Vercoe in Chelmsford, and by myself in West Lond Particularly clear on this point was the verdict the Medical Research Council, and the wording of it worth quoting: "If hospital patients are divided i three classes according to the degree of poverty, t poorest of these three, the very poor and destitu show a lower incidence of rheumatism than t other two."

In the same way the concomitants of deep pover such as underfeeding, overcrowding, excessive d defective sanitation, have not been found to play conspicuous part in predisposing to this disea and if the infection is not contagious and is not c to a germ imported into the patient from outsi there seems no particular reason why they should do

I must not be interpreted as saying that juver rheumatism is rare in the poorest, for this is qu untrue; nevertheless we seem to be faced with t peculiar fact, that although the disease is so stric confined to the poorer classes, it hits particularly t upper poor, families of policemen, postmen, railwaym and decent artisans. I am told that no other disea except dental caries, shows quite the same cl incidence as this.

To sum up this matter: we must conclude th although poverty is a predisposing cause of imme importance, it is not merely poverty per se which at work; some other factor, a common concomit of poverty, must also be at work.

Urbanisation and Industrialisation.—We are fai sure that juvenile rheumatism is a disease of tow rather than of rural areas, and of industrial tow rather than of residential towns. We are wait for fuller and more reliable figures from rural distri to confirm this, and we hope that these will e forthcoming from the "field investigation" in th western counties inaugurated lately by Dr. Ca Coombs.

School Environment.—When we remember th juvenile rheumatism can be regarded as essenti a disease of the elementary school child, wher richer children remain unaffected, we may natura imagine that the mere attendance at an elementa

hool has a deleterious effect in predisposing towards ie infection. Comparing the circumstances of the ch and the poor child attending a day school there re several differences that militate against the poor ild: compulsory attendance, the system of lucation grants per attendance, lack of protection gainst exposure to cold and wet weather, lack of anging and drying facilities if arriving wet at hool; all these things militate against the poorer ild, especially against the delicate child, and most all against the rheumatic child. We cannot, erefore, but conclude that in such circumstances ie rheumatic child must be apt to do badly and to quire heart disease, just as the strain of school ork, especially of a competitive sort, is apt to ring on chorea in an infected subject; yet in the tual origination of the disease the home environment lays, in my opinion, a much larger part than does ie school environment.

Diet and Nutrition.—That diet and general nutrition ting through intestinal indigestion and debility ay play a part in the production of juvenile eumatism has occurred to many minds, particularly, rhaps, in connexion with the abstruse subject of ie determination of relapses and recrudescences. have myself failed to reach any conclusions on these atters. Dr. C. W. Vining has particularly studied ese aspects of the problem, and we are to have the portunity of hearing his views later in this nference.

Damp Dwellings.—I come last to a subject which believe to be of great importance—namely, the fluence which residence in damp dwellings exerts n the production and unmasking of juvenile eumatism. Some affect to regard this as a mere ogy; others think that it works merely by a wering of resistance, and has no particular relation-ip to rheumatic infection. For my part I regard amp as the great ally of poverty in producing eumatism and heart disease in children. In this atter I have in mind damp associated with cold.

Evidence associating damp dwellings with a heavy cidence of juvenile rheumatism is accumulating. he world distribution and the seasonal incidence in ngland are such that it seems hardly possible that amp and cold should be of no moment in predisposing wards the infection. Further, we can easily see at they might do so through their tendency to ve rise to catarrhs and tonsillitis. Again, it is a ggestive point that clinicians note that in damp rroundings rheumatism tends to run an intractable urse, leading to severe heart disease. F. J. Poynton, ur great pioneer in all matters concerned with ute rheumatism, has taught this for many years.

When we come to the distribution of juvenile eumatism in towns it is found that it tends to llow watercourses, to increase in low-lying areas, nd although the "rheumatic map" corresponds oughly to the "poverty map" there are deviations om it to be accounted for by these tendencies. In addington, for instance, we get most of the rheumatic ses not from the poorest streets, but from those ose to the canal and submerged rivers. I have already entioned A. P. Thomson's rheumatism map of irmingham.

In the investigations undertaken for the first port of the British Medical Association's Committee f Inquiry on Rheumatic Heart Disease in Children, ie housing of rheumatic children was examined in ath, Bristol, and West London, and it was found at in 62 per cent. of the instances the children were ving, when first showing symptoms of the infection, damp houses. In Paddington, in a new series of ver 200 cases, I have found much the same proportion, hereas taking non-rheumatic families the proportion ving in damp houses is only about half as large. Ve also find that the middle floors of the houses, hich are, as a rule, the driest floors, provide the west number of cases.

Such facts as these suggest that damp dwellings ave a connexion with the development of juvenile heumatism, and that this connexion is something real and particular to this disease. It may be asked if stress is to be laid on the site of the house or the state of the house itself. Of course, where the site is damp, damp houses are likely to be common, and I am persuaded that there are building sites on which no cheap houses can ever hope to remain dry; but I think the condition of the house is of more importance than that of the site, that it is safer to live in a dry house on a damp site than in a damp house on a dry site. One piece of evidence may be quoted. Although in Eton Town there is, I am told, plenty of juvenile rheumatism, in Eton College, Beaumont College, and the Imperial Service College, all lying in the same district and accommodating between them some 1600 to 1700 boys, the disease is practically unknown.

When I was dealing with the association of poverty and juvenile rheumatism, I said that poverty acting alone and of itself would not account for the mass production of the disease—that some other factor, some common concomitant of poverty, was also at work. This factor I believe to be that of residence in damp dwellings. This governs to some extent the distribution of the disease within the rheumatic stratum of society, and determines in many cases why one family suffers and another of the same grade of poverty escapes.

To this view the objection may be made that if damp has this effect the poorest would suffer most, as they are likely to live in the dampest houses. To this I would submit the following answers: (1) The immunity to rheumatism in the poorest is only relative; no one thinks that in them the disease is rare, on the contrary it is quite common. But the point is that if all the attributes of poverty acted together, rheumatism would be more common and not less common in the poorest than in the stratum above them; whereas, if one of the attributes acts out of proportion to the others this sequence will not necessarily be found. (2) The slum child does not necessarily live in a damp room; on the contrary, many slum houses are well-built old houses, which, though most dilapidated, remain weatherproof. In my view where a slum dwelling is damp the incidence of rheumatism will tend to be heavy; where it is dry it will tend to be lighter. (3) Overcrowding, which is notably absent in rheumatic cases, by promoting warmth may tend to prevent damp. However undesirable it may be from other aspects, it may well be that for many to live together in one room used as a kitchen, may give some protection against this particular disease.

Conclusions.

1. Environment, taken as a whole, is of such importance in the production of juvenile rheumatism that the disease may be regarded as an environmental disease. To alter the environment of children is sufficient to prevent the appearance of the infection amongst them.

2. General lowering of resistance is produced by such factors as poverty, urbanisation, and industrialisation; the tendency specially towards rheumatic infection is largely determined by living in damp rooms, exposure to wettings, chills, catarrhs, &c.

3. Of the environmental factors at work the two of chief importance are poverty and damp houses.

PAYING PATIENTS AT MANCHESTER EYE HOSPITAL. The annual report states that the nine beds (out of 148) which were experimentally set aside for paying patients have been constantly occupied. Last year there were 2579 in-patients and 32,346 out-patients. Another experiment, begun last year, brings to the institution 10*s.* 6*d.* per week for an in-patient and 2*s.* 6*d.* for an out-patient who is a member of the Hospital Saturday Fund.

VENTNOR HOSPITAL FOR CONSUMPTION.—At the annual meeting of the governors of the Royal National Hospital for Consumption at Ventnor it was stated that it was designed to build a modern sanatorium for the use of ultra-violet rays, and for the more intensive application of heliotherapy to tuberculosis in bones and joints, but that the cost would be £50,000. Although one-half of the patients are from London the geographical limitations of King Edward's Fund do not permit of help from that source.

CICATRICIAL STENOSIS OF THE ŒSOPHAGUS.*

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HON. AURIST AND LARYNGOLOGIST TO THE MANCHESTER ROYAL INFIRMARY; LECTURER IN OTOLOGY TO THE UNIVERSITY OF MANCHESTER.

Cicatricial stenosis of the œsophagus is much less common in this country than in America and on the continent, probably because solutions of lye, which consist mostly of caustic soda, are there in general use for household purposes and are drunk in mistake for water, coffee, or wine. The caustic burns which follow lye-drinking are the commonest cause of stenosis of the œsophagus; N. Zimmony states that out of all cases admitted into the throat departments of the hospitals of Berlin and Budapest during the last three years, 10 per cent. had œsophageal stenosis from this cause. J. Guisez, of Paris, analysing 2500 cases of diseases of the œsophagus, examined with the œsophagoscope, found cicatricial stenosis in 185 cases, or 1 in 12; all except 1 per cent. were due to swallowing caustic. Other causes are burns from swallowing nitric, sulphuric, or other acids, bichloride of mercury, or ammonia. The infective fevers, such as scarlet, diphtheria, and typhoid, also syphilis and tuberculosis, sometimes produce ulcers in the œsophagus which may cause stenosis on healing. Chevalier Jackson states that peptic ulcer of the œsophagus is also a cause, and considers that a spasmodic stenosis, with its consequent œsophagitis and erosions and later (pyogenic) infection, may occasionally bring about cicatricial narrowing. The prolonged retention of a foreign body may, when it gives rise to surrounding ulceration, cause stenosis, as also may unskilled attempts at removal of foreign bodies. Stenosis may also result from gunshot and other wounds or burns from hot food or drink. Gottstein reports a case caused by swallowing a hot potato. Gabriel Tucker states that the majority of cases admitted to the Bronchoscopic Clinic, Philadelphia, are children whose stenosis is usually due to swallowing lye.

A single stricture is rare and generally congenital. Usually there are two or more strictures which rarely involve the complete circumference of the œsophagus. Successful treatment depends on this fact, for although the scar tissue is inelastic, the remaining segment of normal œsophageal tissue can stand stretching, and so dilatation is possible.

According to Jackson, the commonest sites of stricture are at the points of normal narrowing of the tube—namely: (1) at the level of the left bronchus; (2) at the level of the crico-pharyngeus muscle or the circular fibres of the inferior constrictor of the pharynx; (3) at the hiatus level (diaphragmatic).

On examination with the œsophagoscope the gullet is often found to be dilated above the stricture, and if the stenosis is of some duration a certain amount of œsophagitis may be present, with erosions of the mucous membrane. The scar is usually pale or white and may be level with the surrounding mucosa or depressed, or may show as a hard ridge. In some cases there is marked stagnation of food and secretion above the stenosis, and these must be washed out before a proper examination can be made.

Symptoms.

The immediate effect of swallowing a caustic is a severe acute œsophagitis, with difficult and painful swallowing and some fever. These symptoms usually pass off in a fortnight or less, and swallowing may become almost normal for a time. Then, as contraction gradually develops, the patient experiences an increasing difficulty in swallowing, first solids, then liquids, and finally, in severe cases, even saliva. Loss of weight is progressive and may become very marked. In the earlier stages the symptoms may be intermittent and may closely simulate a spasmodic stenosis; this is due to temporary blocking with a large bolus of food. Occasionally contraction only occurs very slowly and the patient may first suffer from it many years after swallowing the caustic.

Diagnosis.

The history of having swallowed a caustic or of one of the other ætiological factors already enumerated will, of course, make a diagnosis of cicatricial stenosis very probable. Certain conditions must, however, be excluded. These are cancerous growth of the gullet, foreign body, spasmodic stenosis, diverticulum, and the various forms of compression stenosis such as aneurysm, malignant growths of intrathoracic viscera, and goitre. The first step is X ray examination with an opaque mixture which will usually give great help. Then an examination with the œsophagoscope should be made. A spasmodic stenosis will yield to gentle and continuous pressure with the tube, or, if the examination is made under complete general anæsthesia, will not be encountered. Cancer will reveal itself as a fungating area, bleeding readily, or as a resistant infiltration of the wall of the gullet. Compression stenosis is characterised by a sudden change of the full lumen to a linear or curved slit, and the compressing mass is sometimes felt by the œsophagoscope and the radiogram may show the cause.

Prognosis.

Formerly, when blind bouginage was the routine treatment, the outlook was bad, as in many cases the œsophageal wall was sooner or later perforated. Some pressure is necessary to dilate and traverse a stricture, and the bougie may be engaged in the bottom of a pocket and forced through the wall.

Under modern methods the prognosis is good; the earlier a case comes under observation the better the outlook and the shorter the treatment.

Treatment.

It would serve no useful purpose to describe the many methods of treatment which have been tried. Blind bouginage may be mentioned only to be condemned by the oft-quoted dictum of Trousseau: "Sooner or later all cases of stricture of the œsophagus die of the bougie."

There are two main lines of approach to the stricture: (1) Through the mouth; (2) from below after a gastrostomy.

The passage of graduated bougies under direct vision with the œsophagoscope is favoured by Chevalier Jackson. The size of the bougie is increased very slowly and it is passed at intervals of four to seven days. Multiple strictures are dilated in order from above. P. P. Vinson, of the Mayo Clinic, and H. S. Plummer, among others, have induced the patient to swallow a string, and then threaded on to end of this through an eyed bougie. The string is pulled taut and the bougie pushed and guided through the stricture on the string. Many successful cases are reported as the result of treatment by this method. Loretta and Mickerliez introduced rubber-coppe forceps upwards into the stricture from the stomac and forcibly dilated it. Some successes were reported but the mortality was high. One difficulty was i finding the hiatus of the œsophagus or cardia. Billrot passed from the stomach a filiform bougie to which string was attached and, fixing the string on to conical-shaped bougie, was able to pull it through th stricture. Ochsner and Guisez have both passe strings from below and pulled through a single an a doubled rubber tube respectively.

The Gabriel Tucker Method.

I have recently employed this method in thre cases. The first essential step is a gastrostomy, whic by freeing the œsophagus from the irritation c retained food and consequent œsophagitis, wi usually soon cause the lumen to enlarge sufficientl to allow the swallowing of a silk thread. The nex

* A paper read at a meeting of the Manchester Surgical Society, Dec. 8th, 1927.

ge is to induce the patient to swallow a string of . 15 button-hole twist silk which can usually be luced to pass with a draught of water; in one case e first few inches were coated with chocolate. casionally Tucker found it necessary to attach a it shot to the end of the silk. For small children myself have not treated any) the silk is passed ough the nose on a soft rubber catheter into the sopharynx, and then introduced, a little at a time, m the anterior nares. Considerable time and tience may be needed, but the silk will be swallowed entually. The distal portion has then to be found the stomach and brought out through the gastros- ny wound; this is done with a blunt hook or blunt asil pillar-retractor, and may take considerable ning. A length of No. 4 twisted silk is now ached and pulled through from stomach to mouth, d the two ends tied together. The bougies are made rubber, moulded on to braided silk thread. A loop left free at each end, and the intervening silk is otted to prevent the rubber pulling out. The ends the bougie are tapered and are graduated, like heters, from 10 to 30, French scale. The length each bougie is 35 cm., and this is long enough to gage all the stenosed areas simultaneously. The silk cut and the lower end attached to one end of the ugie, to the other end of which a new piece of silk ied. The upper length of silk is pulled, and a finger passed to the back of the tongue and the thread ered over it. The bougie is pulled up very gently o the stricture, where it is allowed to remain for lf an hour; it is then withdrawn through the uth, bringing with it a fresh length of silk, the two ds of which are tied together and left. My patients eferred the silk through the mouth, but in children must be brought through the nose, otherwise they ll bite it through. The bougie is passed once weekly, d a larger size is not passed until the one in use sses quite freely. No anæsthetic is used, there is discomfort, and the patient does not remain in spital.

Although the gastrostomy feeding-tube remains in u, food is very soon taken by the mouth. Jackson ates that a lumen of 7 mm. is sufficient for all usual rposes. We have found that roast beef is the last ing to resist swallowing.

CASE 1.—A chemical student, aged 20, was admitted into e Manchester Royal Infirmary under Dr. Craven Moore th the history of having swallowed some caustic soda en using a pipette five weeks previously. She suffered erely from dysphagia and vomiting and could only allow fluid in small sips. Her weight was 5 st. 8 lb. e X ray report from Dr. A. E. Barclay stated: "Conical icture—smooth—lower third complete—œsophagus irri- ble, showing well-marked peristaltic and retroperistaltic ves." The case was referred to me for examination with e œsophagoscope, and I reported "Non-malignant organic icture 11½ in. from the teeth" and ventured to suggest immediate gastrostomy and later the use of bougies. Mr. H. Burgess performed the gastrostomy and suggested at I should try Plummer's method. It was finally decided, wever, to use the Tucker method, and this has been carried t as described, treatment lasting about a year. The tient now weighs 8 st. 12 lb. and can eat any food, d no bougie has been passed for three months; the silk read is discarded but the gastrostomy has been kept open case of any further need of bouginage. (A year has apsed, the gastrostomy wound is closed, and the patient n swallow any kind of food. She carries out her full duties a school teacher.)

CASE 2.—Male aged 47. Swallowing became slightly fficult in 1914, and the difficulty gradually increased until 21, when only fluids could be passed. The cause was the cidental taking of a nitric acid preparation used in an gineering works for cleaning metal. Lived on liquid food til operation and retrograde bouginage in August, 1926. ougie passed once weekly, the large size being reached by ovember the same year. Solid foods of all kinds now ken when carefully chewed. Weight increased from st. 5 lb. to 8 st. 4 lb. X ray photograph showed irregular ear stricture about one inch above the diaphragm.

CASE 3.—Male aged 55. Had difficulty in swallowing for months; cause uncertain, but probably the swallowing a corrosive. Has had bougies passed under general æsthesia on three previous occasions. Admitted to the oyal Infirmary under my care, after a gastrostomy by Mr. Howson Ray the usual routine was followed. This case proved more difficult than the two previous ones, in that the bouginage had to be continued once weekly or relapse ensued. With regular treatment he is able to swallow all kinds of food, including roast beef.

In this paper I have drawn largely on the writings of Dr. Gabriel Tucker, of Philadelphia, who was also kind enough to give me personal instruction in the method.

A CASE OF

CONGENITAL MORBUS CORDIS

STUDIED OVER A PERIOD OF TWELVE YEARS.

BY FRANCIS BACH, B.M., B.CH. OXF.,

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THIS is the case of a man who was weakly, pale, and short of breath from early childhood, who at the age of 18 came under medical observation, and who, until his death last year at 30, was under regular medical supervision. A constant visitor to many of the London teaching hospitals and a frequent clinical case at medical examinations, he was brought finally to the London Temperance Hospital, where we had an opportunity of studying the case clinically and of a post-mortem examination.

On May 7th, 1927, the patient, aged 30, had a fainting attack in a neighbouring street and was brought by the police to the London Temperance Hospital.

Résumé of Past History.—He had been a seven months baby of an apparently healthy stock—a "blue baby"—under weight and weakly; as a child he was unable to run about like other children on account of shortness of breath and fatigue on the least exertion. He was kept at home and was sent to a special school. In 1915, at the age of 18, he first came under observation at St. Bartholomew's Hospital, where he was admitted for investigation as he had been rejected from the army on account of his heart. He complained of occasional pain round the heart and, for the three months prior to his examination, of a cough with a slightly blood-streaked sputum.

As a boy he was ill-nourished, cyanosed, somewhat underdeveloped, with bulbous fingers and toes and an infantile-shaped chest. His heart was not enlarged; the pulse-rate was regular at 80–90, the systolic blood pressure varied from 96–119 mm. Hg; a soft systolic murmur was heard to the left of the sternum, confined to the apical area. The spleen was not palpable, the stools were normal. The blood picture showed red blood corpuscles 8,300,000, Hb 150 per cent., C.I. 0·88, white cells, 7600. A radioscopic examination revealed no abnormality of the heart and some increased hilar opacity, but normal lung areas. The diagnosis of congenital morbus cordis was made; a note was added to the effect that no congenital defect other than a doubtful patent foramen ovale was found, and the patient was discharged as unfit for the army. He continued his normal restricted life.

Two years later, at the age of 20, he began to complain of giddiness and fainting attacks, associated with severe frontal headache, which appeared to be brought on by walking. Later he had occasional hæmoptyses. It was on account of these attacks that during the next ten years he was admitted to so many London hospitals.

In 1924 he was admitted unconscious to St. Bartholomew's, brought by the police. When seen in the surgery he was deepy cyanosed, unconscious, retching violentlyand vomiting small quantities of food. The breathing was slow and weak. The radial pulse was not palpable. Strophanthin, gr. 1/100, was given intravenously, the pulse improved rapidly, and was soon of good volume at a rate of 80 to the minute. The patient gradually regained consciousness. He was able to describe how he had suffered from attacks of giddiness as long as he could remember; that suddenly he would feel as if his head was going round, objects would look double, that to prevent himself from falling he would lean against the wall or grasp the railings during an attack. The seizure would last a few minutes and be followed by a severe headache, localised across the forehead and down the right side of the face; with this would be associated a severe stitch-like pain shooting from the left groin to the left nipple. The attacks had gradually become more severe and of longer duration; there would be loss of consciousness and he would feel unwell for two or three days afterwards.

In 1926, on account of severe hæmoptyses, he was admitted to University College Hospital. Investigation revealed no evidence of pulmonary tuberculosis, and sputa

examinations were repeatedly negative. On radiological examination there was much fibrosis of the lung roots, with a heart shadow slightly larger than normal. Electrocardiographic tracings revealed a normal rhythm with right-sided preponderance and an enlarged P wave in lead II.

Early in 1927 he was readmitted to St. Bartholomew's in another attack of unconsciousness, and the diagnosis of congenital defect was again made. The red cell count in the blood was 9,200,000 per c.mm., the oxygen capacity of the blood was 20·21 vol., and the arterial saturation 63 per cent.

Condition on Admission to the London Temperance Hospital.—He was brought in unconscious, collapsed, with a rapid pulse and subnormal temperature. On examination next morning (May 8th, 1927): Thin man, medium height, markedly cyanosed cherry-coloured lips. Eyes: Pupils small, equal, react to light and accommodation. Mouth: Tongue furred, mucous membranes cyanotic; teeth very septic, many missing. Neck: No abnormal pulsation, no glands palpable. Chest: Poorly covered, symmetrical except for slight precordial bulge. Lungs: Air-entry good; vesicular breathing; no added sounds. Heart: Apex-beat not seen, but felt in fifth left intercostal space, 4½ in. to the left of the midline; localised, not heaving. No thrill at apex or base. A.C.D. not enlarged. Blood pressure, 95/50. Radial pulse palpable; fair excursion; regular rate 120; heart sounds clear, but I and II at apex somewhat muffled; pulmonary second sound not accentuated. No bruits. Abdomen not distended; moves well. Spleen not palpable. Liver not palpable. Abdominal reflexes normal. Marked clubbing. Tendon reflexes all exaggerated; no signs of congestive failure. Urine: Faint trace of albumin; specific gravity, 1015. No sugar, blood, or acetone. Blood counts: R.B.C., 8,310,000; Hb, 90; C.I., 0·54. W.B.C., 8600 (immediately after venesection); polymorphonuclear, 48 per cent.; lymphocytes, 47 per cent.; large mononuclear, 3 per cent.; eosinophiles, 1 per cent.; basophiles, 1 per cent. Two weeks later: R.B.C., 928,000; Hb 92; W.B.C., 9600.

Ophthalmic Examination.—Conspicuous engorgement of retinal vessels both arteries and veins; the disc highly coloured. Otherwise normal. Sputa examinations for tubercle bacilli negative.

A diagnosis of congenital morbus cordis was made. The polycythæmia was thought to be essentially secondary to the congenital heart defect, but due in part to some focus of infection. A search for foci was made, and on May 13th six carious teeth were removed under general ethyl chloride anæsthesia.

On May 16th the patient complained of pain in the neck, which was relieved by fomentations. A throat swab showed a predominant staphylococcus and *Micrococcus catarrhalis*. On the 18th he complained of severe headache situated bilaterally in the frontal and temporal regions, and of a cold and running from the eyes. The mouth appeared clean. A careful examination of the central nervous system elicited no abnormal signs. A small venesection was performed. On the 24th a venesection of 200 c.cm. of blood relieved the headache. The temperature became raised, varying from 100°–103° F., pulse-rate 85–100. On the 26th the temperature remained raised the patient hiccoughed frequently; the discs appeared normal. All the tendon reflexes of the lower extremities were symmetrically exaggerated. On lumbar puncture 40 c.cm. of turbid fluid under greatly increased pressure were withdrawn and revealed many pus cells, the majority of which were polymorphonuclear, and a Gram-positive bacillus. The fluid was cultured on blood-agar; there was no growth. On the 27th the patient died.

Post-mortem Examination.

Cyanotic asthenic type; marked clubbing of the fingers; the mouth appeared clean and the tooth sockets healthy.

Chest: A few pleural adhesions, no free fluid. The lung substance somewhat œdematous, air-containing; no evidence of old scarring, calcareous glands, fibrotic or bronchiectatic changes. The trachea and bronchi appeared normal and the bronchial arteries slightly enlarged.

The heart did not appear enlarged—weight 12½ oz. The pericardium was normal. On examination of the external surface a single vessel appeared to arise from both ventricles; this proved to be the aorta. The right ventricle was enlarged, and the musculature was hypertrophied so that its wall equalled that of the left in thickness. In the substance of the upper part of the anterior wall of the right ventricle a separate cavity, measuring about 1½ in. by ½ in., was found. This proved to be the bulbus cordis, existing as a separate chamber, as normal fusion with the right ventricle had not taken place. This chamber was found to communicate with the right ventricle by a small aperture, through which a probe could just be passed. The tricuspid and mitral valves appeared to be normal. The foramen ovale was a comparatively wide slit-like orifice, and the interventricular foramen was the size of a shilling. The aorta arose from the right ventricle; the circumference of the first part was slightly greater than normal. The valves were normally formed a healthy. There was only one coronary artery, which arc from the normal position of the right coronary arte The intima of the aorta showed slightly early atheromatc changes. The ductus arteriosus was closed.

Arising in the musculature of the right ventric immediately to the left of the aorta and immediate superior and anterior to the bulbus cordis, a very sm pulmonary artery was found. There was no communicati between it and the bulbus cordis. There were th malformed valves, suggesting arrested development about the third week of intra-uterine life; immediately dis to these the pulmonary artery widened slightly.

Abdomen: Spleen slightly enlarged, congested, no infa tion. Liver slightly enlarged, congested. Kidneys norma stomach and intestines normal.

Brain: Covering the vertex of the brain and extendi down to the base was a quantity of green pus. The bra substance appeared somewhat insected, but otherw normal. The fluid in the ventricles was clear. In the rig posterior temporal region, lying deep to the lateral ventric was a localised abscess cavity, measuring 1½ in. by 1½ i containing fluid thick green pus.

Discussion.

The case is of interest in many ways. Clinically has been studied over a period of ten years. Consid ing the cyanosis and the associated polycythæmia the dominating factors, polycythæmia rubra, Vaque disease, and polycythæmia secondary to a congeni heart defect constitute the initial differenti diagnosis. The history, particularly the age at whi the first symptoms were manifested, excludes primary polycythæmia. In 1888 Fallot [1] point out the "tetralogy" of pulmonary stenosis, int ventricular septal defect and dextraposition of t aorta with hypertrophy of the right ventricle as t commonest underlying condition in patients wi congenital cyanosis who reach adult life; he not that cyanosis is usually absent in cardiac defec without associated pulmonary stenosis. The ca described is one of congenital cardiac defect due arrest of growth before the different parts of the hea had been entirely formed. It falls into the "cyanotic group. The very marked cyanosis is characteris of those cases of congenital cardiac disease in whi there is a serious interference with the circulati leading to a pathological increase in the amount reduced hæmoglobin in the circulating blood. De cient aeration of the blood is the essential elemen right heart hypertrophy, increased respiratory activit and polycythæmia are developed in an attempt supplement the inefficient pulmonary circulatic Chronic asphyxia develops, with consequent periphe clubbing and retinal changes. In the various descri tions of such cases, and in the classifications of Ma Abbott and others, an enlarged heart and the presen of precordial thrills and cardiac murmurs are note Although a precordial thrill is present in many of the cases Rolleston accounted for the absence of thrill a somewhat similar case by the presence of a lar defect of the septum, through which the blood pass with ease into the aorta. This is the explanati which I offer in this case. The absence of abnorm cardiac murmurs is explained by the complete absen of blood in the pulmonary artery.

Repeated clinical, bacteriological, and radiologic examination revealed no evidence of pulmona tuberculosis. The hæmoptyses may have been due congestion of the pulmonary circulation, associat with a slight atheroma of the enlarged bronch arteries. The slight atheroma at the base of the aor was not, I think, incompatible with an acute termir infection.

The faints were probably cerebral anoxæmic attac Curious epileptiform attacks of a similar nature, in young man with a similar cardiac defect, have be described by Campbell Howard as apparently due a temporary thrombosis of the cerebral capillar produced by a high degree of viscosity of the pol cythæmic blood.

Cerebral abscess is a not uncommon complicatic It occurred six times in a series of 96 cases

[1] Fallot: Marseille Méd., 1888.

monary stenosis recorded by Abbott.[2] Similar cases recorded by Ballot, Peacock,[3] and others. The ebral abscess was probably due to an infective bolus of a paradoxical character. Owing to the sed pressure in the right chambers of the heart, ociated with dextraposition of the aorta and a ntricular septal defect, the conditions were favour- e for a crossed embolism from thrombi lodged within right auricular appendix, or the passage of gments from thrombosis in the systemic veins. primary focus was found.

n pulmonary atresia life is usually very short; the es with closed interauricular-interventricular septa die within the first few months of life. When a ect of the interventricular septum alone exists the ient may live some years. The highest age that I ve found in the literature is that of a child of 13, cribed by Peacock. The duration of life in monary stenosis with closed interventricular septa elatively high; a patient of Hallemand's died at age of 57, and the average recorded age for septal ects is 36.

consider the case described to be one of pulmonary esia which has survived until the age of 30.

should like to express my thanks to Sir Arthur ith and Dr. E. G. B. Calvert for their help, and to latter for permission to publish this case.

Clinical and Laboratory Notes.

A NOTE ON THE EARLY DIAGNOSIS OF PRIMARY PERINEPHRIC SUPPURATION.

By S. A. Lane, M.D. Dub.,
SURGEON TO THE BOGNOR WAR MEMORIAL HOSPITAL.

PERINEPHRIC suppuration in a previously healthy ividual is not common enough for any one surgeon have a preponderating experience in its diagnosis, l it is doubtful whether any other abscess can de detection for so long or pus form in any er situation in such phenomenal amount without iously jeopardising life.

These remarks are based on eight cases of primary inephric abscess of which I have kept note.

. In seven cases the diagnosis was so belated as to se danger to life, much suffering, and protracted illness.
. In seven cases the condition was right-sided.
. Pus was odourless in all; this contrasts with the cess secondary to empyema, appendicitis, or pyelitis, ere the pus is often offensive.
. In four cases there was a definite history of recent boils.
. *Staphylococcus aureus* and pneumococcus were the cting organisms most frequently found.
. All eight recovered satisfactorily.

t has been said that the diagnosis is usually y, but the mistakes made include neurasthenia, umatism, lumbago, hip-joint disease (four cases), positis, sciatica. In several cases the correct gnosis was not made until the usual signs of acute puration (severe pain, temperatures of 104° F., ors, and sweats) had figured prominently for eral weeks and a large swelling outside the border the erector spinæ muscle had directed attention the state of affairs. In two cases where ammation of the hip-joint was diagnosed the b was put in extension on an inclined plane; in instance this was maintained for six weeks and the other for about six hours.

Signs and Symptoms.

During the preliminary stage the patient feels ow par, is easily tired, and has no inclination for y sort of activity. In patients suffering from ls this condition was quite naturally and perhaps rectly ascribed to the boils. There was pain in the loin and often in the hip-joint, stiffness of the lumbar spine limitation of extension at the hip-joint, and bowing of the body to the affected side. This produced a gait aptly described in two cases as "walking like an old man."

Later, with the ordinary accompaniments of acute suppuration, pain became severe and the patient lay on the affected side with the thigh supported in flexion. Any attempt to extend the thigh caused much pain, referred to the hip-joint and down the thigh. Thoracic respiration was markedly accelerated, without the slightest dyspnœa or any signs of pulmonary trouble.

The appearance of a swelling to the outer border of the erector spinæ muscle is not necessarily late. If looked for carefully it may be detected at an early stage; later it becomes prominent and cannot well be missed.

Enlargement of the inguinal glands and the intra-abdominal glands along the iliac vessels was very marked in two late cases.

Diagnosis.

The preliminary stage described is often well marked; in one case it prompted a diagnosis of neurasthenia. Taken in conjunction with later signs it may be of value. Swelling at the outer border of the erector spinæ is probably the earliest reliable sign, but must be sought carefully.

The increased respiratory rate in the absence of signs in the chest, and the enlargement of the iliac and inguinal glands, point to the probability of retroperitoneal inflammation. A leucocyte count during the acute febrile stage should be of value in recognising suppuration. A screen examination of the diaphragm where there is respiratory frequency might be of value, but was not done in any of these cases.

A mistaken diagnosis of hip-joint disease was made in 50 per cent. of this series. This should be ruled out by noting that the patient often lies on the trochanter, and that the joint can be moved without discomfort in any direction so long as the iliopsoas muscle is not tautened.

Pain referred to the hip and thigh, in conjunction with the symptoms described, should direct attention to perinephric suppuration in the same way that pain at the knee may indicate disease at the hip.

A CASE OF GLASS FRAGMENTS IN THE KNEE.

By A. H. Bizarro, F.R.C.S. Eng.,
SURGEON TO THE S. FRANCISCO HOSPITAL, OPORTO.

THE interesting features of this case are (*a*) its clinical similarity with a case of external semilunar injury; (*b*) the absence of infective intra-articular reaction in spite of the presence of dirty glass within the knee-joint for a long time; and (*c*) the curious inframeniscal position of the foreign body.

The patient, a girl of 9, came to consult me on Sept. 18th, 1925, complaining of pains on her left knee and inability to extend it fully.

She fell down in her garden on Oct. 20th, 1924, and cut her knee. She apparently fell on the patellar surface of the joint with the leg flexed. There was a wound on the anterior surface of the knee half an inch from the outer border of the patella, and another at the back of the leg, behind the fibular head. These wounds healed up in three weeks. Ever since then the knee has felt "funny," and at times she was apparently unable to walk properly owing to pain on attempting to move the joint. Three weeks before coming to my consulting-room she felt acute pains in the joint, which was swollen for three days. A fortnight later another attack of swelling and pain forced her family to seek advice.

When I saw her the left knee was swollen all over. The swelling was within the articular synovial cavity. The scars corresponding to the wounds above mentioned were irregular and slightly cheloid. There was a spot of tenderness, on pressure, at the articular line, near the outer border of the patellar ligament and corresponding to the external semilunar cartilage. At the back of the joint, and behind the head of

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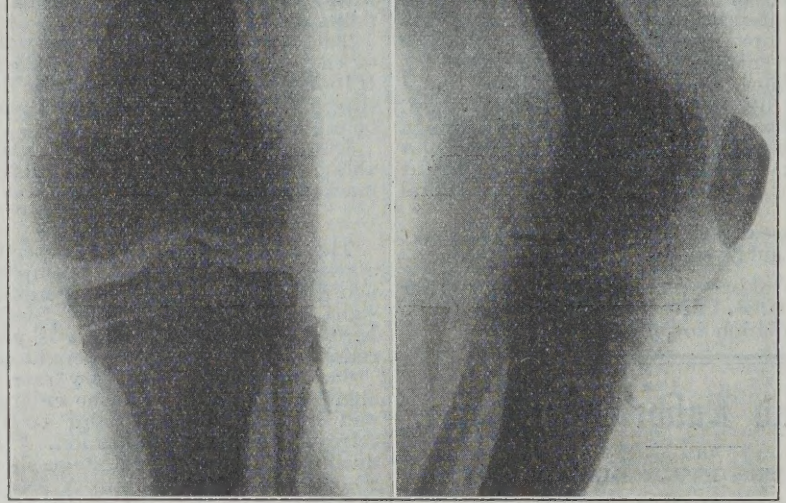
Abbott, Maude E.: Modern Medicine, Osler and McCrae, ed., 1927.
Peacock, T.: On Malformations of the Heart, London, 1858.

the fibula, pressure elicited less severe pain. The attempt to extend her left leg fully caused severe pain in the joint. There were no signs of abnormal lateral mobility nor any particular line of radiation of the pains on passive or active movement of the knee. There were no constitutional symptoms and the temperature was normal.

A skiagram by Dr. A. D. Boto showed several foreign bodies in and around the joint. There was one, ½ inch long, between the external condyle of the femur and the outer tibial tuberosity. The lateral skiagram showed a group of three small foreign bodies above and behind, and another smaller one below and behind the first. These four were at the back of the joint and apparently fixed in the structures that limit the capsule posteriorly. Another, triangular in shape and about 1 inch in length, lay at the back of the upper end of the fibula pointing downwards and slightly outwards. The bodies were apparently glass. The patient recollects falling through a greenhouse window.



Radiogram showing glass fragments in the neighbourhood of the knee.

On Sept. 23rd, 1925, under open ether, the joint was opened by Sir Robert Jones's technique. A tourniquet was applied and the leg was kept flexed. A 5-inch incision was made, 1 inch to the outer border of the patella, avoiding the scar. There was some free yellowish synovial fluid. There were no free foreign bodies within the articular cavity. The external meniscus was uninjured and the surface of the crucial ligaments seemed normal. I much regretted not having divided the patella. I then explored under the meniscus with a Cooper's needle. To my satisfaction t linear body seen in the X ray photograph presented at t posterior limit of the external semilunar cartilage. It w triangular and broken at the apex. The Cooper's nee moved it freely to and fro until, after some tedious exerti it got round into the joint cavity. I did not try to whether it glided forwards on flexing the leg as I feared absorption. It was not possible to find the four smal bodies. The syn vial membra and capsule w stitched w ultratan cat No. 0. When anterior wou had been dres the big triangu foreign body v easily removed a longitudin incision throu the skin and of the poplit space.

The two pie of glass proved be of the ch window varie The four sma pieces left beh apparently longed to intra-articu piece which v removed. seems that joint moti pushed its sh end through posterior lig ments, break the four sm pieces off sharp end.

The skin wounds took four months to heal complet There was no intra-articular reaction, and convalesce was otherwise uneventful. The patient regained range of painless articular motion and the joint is f from fluid.

My thanks are due to my surgical assistant, M Estrada, and to my chief sister, Miss Flora, for after-care of the case.

A NOTE ON JAUNDICE FROM FOCAL NECROSIS OF THE LIVER.

By C. E. Newman, M.D. Camb., M.R.C.P. Lond.,
MEDICAL REGISTRAR, KING'S COLLEGE HOSPITAL.

Some time ago, while arranging the notes of cases of catarrhal jaundice on which I had done van den Bergh's test, I was struck by a curious coincidence: all those cases in which the condition had appeared as an intercurrent disease in patients already in hospital fell into one of two categories. They were either surgical or obstetric cases which had been under chloroform and had been to some extent septic. They were all diagnosed as "catarrhal jaundice" or "ascending cholangitis," but it seemed so odd that these conditions should be confined to two such limited groups in a general hospital that a more searching investigation was undertaken.

Earlier cases included a pneumococcal septicæmia following a mastoid operation, an appendicitis with peritonitis, an operation for hernia followed by rigors, and a forceps delivery, in all of which chloroform had been used, but the notes are not sufficiently detailed to justify inclusion. The following are the details of the more fully investigated cases:—

Case 1.—Female aged 44. Operated on under chloroform and ether for carcinoma of the breast on May 29th, 1925. On the 31st she was feeling ill (she had vomited a good deal after the anæsthetic), and had acetone and bile in the urine. Her conjunctivæ were distinctly yellow, and the van den Bergh test on the same day gave a prompt reaction 21 units. The fæces contained bile. Next day there definite systemic jaundice. By June 4th the jaun had almost disappeared and there was only a trace bilirubin in the urine, but no bile salts. She recov completely.

Case 2.—Female aged 39. Delivered of a macera fœtus under chloroform on Oct. 12th, 1925. Wasserm reaction positive. She had a high intermittent temperat with rigors until the 20th. The blood culture was un tunately contaminated. She became jaundiced and vomi on Oct. 19th, with definitely pale stools and bile in urine. The van den Bergh test on the 22nd gave a pro reaction and 6·5 units. The jaundice faded slowly as general condition improved, and she went out well.

Case 3.—Female aged 16. Operated on for tonsils adenoids on Feb. 22nd, 1926, and on the 28th for mastoid having eaten very little carbohydrate in the meanti Chloroform was used on both occasions. She was ill after the second operation, with a high swinging t perature and much vomiting. On March 2nd she bec jaundiced and delirious, with much acidosis. There no bile in the urine. The van den Bergh test gave a pro reaction and 7 units. Bile appeared in the urine for first time, and in large quantities on the 5th. A hæmol streptococcus was isolated from the mastoid, from erysipelatous inflammation on the arm round a needle p and from a septic arthritis of the ankle-joint which develo on the 17th. She was treated by immuno-transfusion an autogenous vaccine, and ultimately recovered. The ja dice faded on the 19th.

Case 4.—Male, aged 49, admitted to hospital on July 2 1926, with a three weeks' history of pain in the t and rigors, intensely jaundiced, and with every appear of septicæmia. The abdomen was distended, with t recti, and tenderness was felt over the splenic area.

ne contained blood and albumin, but no bile, and there s a polymorphonuclear leucocytosis. The van den Bergh ction on admission was prompt, with 3·8 units. Bile ts appeared in the urine next day, and a considerable antity of bile pigment. Death took place from septi- mia of unknown origin three days later. Blood taken art puncture immediately after death gave a prompt n den Bergh reaction and 3·2 units.

At the post-mortem examination a huge perinephric scess was found, with abscesses in the kidney from which *Staphylococcus aureus* was isolated, and a right upper ar pneumonia. The liver was large and very fatty, l the microscopic sections gave a clue to the pathology the jaundice. The bile-ducts were apparently quite althy, but the portal spaces were slightly infiltrated with nd cells and polymorphonuclear leucocytes, not in ecial relation either to the portal veins or the hepatic eries. The whole liver was full of small, irregular, ttered areas of degenerated cells, many of which had ie on to complete necrosis. These areas were mainly the outer and middle zones of the so-called lobules. ere necrosis had taken place the bile capillaries in the tre of the columns of liver cells were thrown up against blood capillaries and separated from them only by their lothelial lining and possibly the remains of the cell walls the disintegrated liver cells. That is to say, there was thing separating the two but a permeable membrane, ough which bile pigments and salts could diffuse from the her concentration of the bile to the lesser concentration the blood, thereby producing a blood serum similar to t in cases of obstructive jaundice, and explaining the mpt van den Bergh reaction without invoking a hypo- tical mechanical obstruction by catarrh or inspissated e. There was, indeed, no evidence of obstruction, croscopic or microscopic.

CASE 5.—Female, aged 28, who had miscarried of a three nths' child on July 31st, 1926, was admitted with tetanus August 4th. She was given chloroform daily to control spasms from the 5th to the 10th, and serum treatment. the 12th she became jaundiced and had bile in the urine, l the liver was enlarged. She never vomited. The van n Bergh reaction was prompt, with 11 units. On the h, when the jaundice was just beginning to fade, the ulose tolerance test gave the following result:—10 A.M.: od-sugar, 0·109, 30 g. lævulose given fasting. 11 A.M.: od-sugar, 0·150; 11·45 A.M.: blood-sugar, 0·150. Blood en from the uterine cavity was sterile. The jaundice was visible on August 17th, and the last trace of bile in the ne was found on the 24th. She made a good recovery.

CASE 6.—Female, aged 23, admitted in labour on gust 24th, 1926. She had been vomiting for 48 hours viously and had eaten nothing, but had shown no other sign pregnancy toxæmia. She was delivered on August 25th, l a post-partum hæmorrhage, and was under chloroform an hour and a half for the repair of a torn cervix. She l also had a little chloroform during labour. She vomited reat deal next day and was obviously very ill. Fifteen rs after delivery she was jaundiced; the urine contained ttle acetone and albumin, but no bile, and the van den gh test gave a prompt reaction and 7 units. On gust 27th she vomited less, but was very collapsed and an to show petechial hæmorrhages in the mouth. Next day died, with œdema, fibrillary twitchings of the muscles, l air-hunger. Just before death the urine contained a le albumin, but no acetone; unfortunately no tests for were applied.

The post-mortem examination revealed many petechiæ ler the serous membranes, and bile-stained peritoneal l pleural exudates. The kidneys were engorged and a le bile stained. The liver weighed 2 lb. 11½ oz., and was mpletely and uniformly fatty in appearance, but with eculiar rubbery consistency and no bulging of the liver stance over the capsule. There were no interstitial morrhages and the capsule was tense. The sections wed gross fatty change, most of the cells being full of , and in the zone of the lobule intermediate between the tal and efferent veins the change had gone on to complete chy necrosis, the appearance being very similar to that Case 4, but more intense and different in distribution. e only healthy cells were those related to the portal veins. this case, also, there was no macroscopic or microscopic dence of obstruction to the bile-ducts. Blood taken t mortem gave a prompt van den Bergh reaction and units.

These two cases both present the syndrome of ndice giving the prompt van den Bergh reaction thout obstruction, but with focal necrosis in the er, one of them being caused by sepsis alone and other by chloroform alone. It therefore seems re than probable that those other and commoner ses, in which both agents play a part, have a similar pathology. Unfortunately, since no such case has yet come to autopsy, I have had no opportunity of examining liver sections.

In one more case necrosis caused by chronic venous engorgement also produced, apparently, a prompt reaction type of jaundice.

CASE 7.—Female, aged 32, an old-standing case of mitral stenosis and adherent pericardium of rheumatic origin, was admitted on June 22nd, 1926, with severe back-pressure signs and definite jaundice. She had a prompt van den Bergh reaction and 6·5 units. At the post-mortem exam- ination were found an advanced nutmeg liver, all the signs of cardiac back-pressure, and a bile-stained ascites. There was no obstruction to the bile-ducts and the fæces were of normal colour. The liver sections showed extreme venous congestion and fatty degeneration, and considerable necrosis around the efferent veins.

Conclusions and Summary.

Chloroform and sepsis, either alone or, more commonly, acting in conjunction, can cause a paren- chymatous degeneration of the liver. This process may go on to actual necrosis of liver cells, and there seems to be a group of cases of jaundice, clinically and biochemically "obstructive" in type, in which there is no obstruction to be found post mortem, and in which the jaundice appears to be due to absorption of bile into the blood stream through the capillary endothelium in the areas of necrosis. These cases fall into the "toxic-infective" type of jaundice, and I believe that this mechanism would explain the pathology of the whole of that group more adequately than any other theory. The same process explains the "obstructive" type of jaundice which occasionally appears in the terminal stages of cardiac failure. A point of practical importance is that all the cases described above, in which jaundice followed chloroform administration, had been "prepared" for the anæsthetic by starvation and purging. Con- sidering how susceptible the liver is to poisoning when depleted of glycogen, it would seem wise to ensure an adequate glycogen store by previous administration of glucose, rather than to run an additional risk by starving the patient.

I should like to thank Sir Charlton Briscoe, Sir Lenthal Cheatle, Mr. Arthur Cheatle, Dr. C. F. T. East, Mr. W. Gilliatt, and Mr. A. C. Palmer for their kind permission to publish these cases.

References.—McNee, J. W.: Quart. Jour. Med., 1923, for general discussion of modern views on jaundice. Andrewes, F. W.: Ibid., 1924, xviii., 32, reference to Eppinger's views on focal necrosis in catarrhal jaundice. Macallum: Text-book of Pathology, Chap. xvi., on toxic necrosis in the liver.

Medical Societies.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

RELATION OF SYPHILIS TO MALIGNANT CHANGES.

A MEETING of this Society was held in London on April 27th, with Sir HUMPHRY ROLLESTON, the President, in the chair.

Dr. ARCHIBALD LEITCH spoke on Syphilis in Relation to the Ætiology and Diagnosis of Malignant Disease. He said the manifestations, complications, and sequelæ of syphilis were so varied that it was not surprising to find that disease advanced as a pre- disposing, exciting, or contributory factor in malignant disease, especially as so comparatively little was known as to the causes of the latter. The idea seemed to be that syphilis left behind it a tissue the resistance of which had been so lowered that it easily became the seat of cancer. There were still some who expected that the cause of cancer would prove to be a parasite. The Wassermann reaction was largely an impersonal criterion, but not altogether so, though the proportion of borderline cases was admittedly small. The fact that the

Wassermann reaction was positive in a particular patient did not necessarily mean that a particular lesion found in that patient was syphilitic in nature. The statement was often made that malignant disease had supervened on the site of an old syphilitic ulcer, but he wondered whether that was an instance of an oft-quoted alleged occurrence. A French author put the matter very definitely by declaring that "syphilitic persons are potential candidates for cancer, and live for ever beneath a sword of Damocles." Dr. H. J. B. Fry, of the Cancer Hospital, London, had taken 761 cases of cancer and tested them for syphilis, comparing this with 720 non-cancerous cases in the same hospital practice. Of the former 8·7 per cent. and of the latter 10·7 per cent. gave a positive Wassermann reaction. This did not seem to make the relationship of the two diseases very definite. The case seemed to be strengthened, however, by taking each organ or tissue of the body separately, as Dr. Fry had done. For example, in cancer of the cervix and uterus, 13·3 per cent. gave a positive Wassermann reaction; in cancer of the buccal cavity 13·2 per cent. were positive, while in cancer of the tongue 31 per cent. were positive. Leucoplakia was frequently present in epithelioma of the tongue. Was syphilis the causative factor in this leucoplakia which later became malignant? Bruck had done the Wassermann reaction in 12 cases of leucoplakia, and had found it positive in 10. Leucoplakia of the vulva was said to become malignant almost invariably. Figures for the breast failed to show any connexion between the two diseases, and only 3 per cent. of cases of cancer of the rectum were syphilitic. Syphilis of the rectum was, in fact, a very rare disease. In the series 15·4 per cent. of cases of malignant disease of the stomach gave positive Wassermann tests. The late Sir C. Ryall, who had a large experience as surgeon to the Cancer Hospital and the Lock Hospital, found that 80 per cent. of cases of lingual cancer gave a history of syphilis, a figure which closely approximated to that reported by Fournier. Ryall believed that smoking in a person with a syphilitic tongue was the cancer determinant. It was really a vicious circle. Dr. Leitch referred to experiments of his own on tobacco extracts, and quoted the experiments of Brown and Pearce in which carcinoma had developed on syphilitic lesions in rabbits.

Discussion.

The PRESIDENT said his own impression was that squamous-celled carcinoma seldom developed as a result of chronic syphilitic lesions, and even less often than on lupus. Dr. Leitch's figures suggested that squamous-celled carcinoma was more prone than the more highly differentiated carcinoma to occur in syphilitic subjects—e.g., there was a contrast between squamous epithelioma of the tongue and malignant disease of the stomach. Was it possible that syphilis more efficiently destroyed the activity of columnar than squamous cells? He agreed that cases regarded as syphilitic stricture of the œsophagus usually had squamous-celled carcinoma. It would be interesting if Dr. Leitch could give the figures for chimney-sweep's cancer. McNee had brought forward two cases in which gumma of the stomach imitated carcinoma, and Sir Humphry had always thought that chronic ulcer of the stomach might occur more often in persons with syphilitic endarteritis than in ordinary people.

Colonel L. W. HARRISON said that he had always considered that the binding factor was chronic irritation. It was well known that syphilis tended to recur on a damaged spot, as was well shown by chronic syphilitic glossitis. In the past, the latter condition was less commonly seen in women, because men more often irritated their mouths by smoking and strong alcoholic drinks. This difference might well vanish with women's changing habits. In the case of cancer of the tongue, it was easy to understand the stages: syphilis, sensitive areas, the irritation of tobacco, perhaps a rough pipe—and, on such areas, cancer. One of the best illustrations he knew of this irritative cause of cancer was furnished by the Kashmiris, who carried a small fire-basket pressed against the abdomen for warmth in the mountains. These people frequently developed cancerous ulceration on the abdominal wall. He thought it was generally agreed that there was a close relationship between syphilis and cancer of the tongue. The subject of syphilis of the cervix had not been very fully worked out.

Dr. DAVID NABARRO questioned the wisdom of relying on the Wassermann report as infallible evidence of the existence of syphilis, as he frequently received a negative report concerning the fathers of children known to be syphilitic. In his own clinic 70 per cent. of the fathers of syphilitic patients were reported to have a negative Wassermann.

Dr. F. C. DOBLE said that epithelioma of the lower lip was quite common in Cornwall, a county where syphilis was very rare. In 14 cases in which the cancer was excised and examined the blood Wassermann was negative. In Cornwall the cancer was attributed to the fisherman's habit of holding the lines in the mouth. The irritation might be due to the tar on the lines or to the pull on them by the fish when hooked.

Dr. LEITCH replied.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on May 3rd Dr. DONALD HALL, the President, took the chair and Dr. C. G. SCHURR read a paper on

Myopia in Childhood.

He said that the four theories most widely held about the causation of myopia could be considered under two headings, Posture and Predisposition. Under the first came (1) excessive convergence, and (2) the effect of gravity; whilst factors of predisposition were: (1) a small ciliary body, and (2) diminished resistance of the sclera. An examination of the first three of these showed that in the end they were dependent on the fourth. Without an abnormal distensibility of the sclera they could not of them be deleterious in their action. Heredity might undoubtedly be a contributory cause of diminished scleral resistance, but it did not account for those cases, by no means uncommon, in which there was no history of myopia in the family, or indeed even a history of hypermetropia. An investigation of the height and weight curves of myopic children in the Barclay Home, Brighton, suggested that there was a definite relationship between myopia and metabolism. A series of graphs of contrasting cases showed that where myopia was found to be increasing, there was always a falling-off in the weight and height ratio compared with the normal. This condition was not found where the myopia was stationary, even if corneal nebulæ were present. The material so far available had not proved sufficient upon which any firm conclusions could be based, but it afforded ground for interesting speculation. Dr. Schurr concluded by considering the question of the future of children who attended myope schools. The establishment of workshops, where they could compete with persons of like disability, seemed more reasonable and less wasteful than sending them out to compete with normal persons. The early detection of myopes was an important duty of medical officers in charge of schools, and practitioners could give useful advice on such matters as suitable exercise, food, sleep, and the choice of profession.

LEAGUE OF NATIONS PUBLICATIONS.—The department of Messrs. Constable and Co. (10, Orange-street, London, W.C.), which is concerned with the issue in this country of the official publications of the League of Nations, has been placed under the charge of Mr. P. Savary, who has been associated with the information section of the League for over four years.

CONFERENCE ON RHEUMATIC DISEASES.

BATH, MAY 10TH–11TH.

THE Conference on Rheumatic Diseases held in ath last week came to a satisfactory conclusion on riday, May 11th, and all who took part in it were nanimous about two things—that as a business eeting it had been a marked success, and that the portunity for fellow-workers to meet, afforded by e amenities of the City that had issued the summons, as unrivalled. The spirit in which those amenities ere accepted by the congressists showed their full d unanimous appreciation of their reception. The nference closed with a unanimous vote of thanks Mr. Edric Chivers, the Mayor of Bath, alike for e profuse hospitality granted by the City and for s own personal endeavours to carry out the objects the Conference. The passing of the vote of thanks the Mayor was accompanied by an acknowledgment the particular debt of gratitude owed to the Lady ayoress, Mme. Sarah Grand, and to the Organising mmittee, Dr. F. G. Thomson, Dr. Rupert Waterouse, Dr. R. G. Gordon (President of the Bath anch of the B.M.A.), Dr. Vincent Coates, and Mr. hn Hatton, the director of the Royal Baths, who ted as organising secretary.

THURSDAY, MAY 10TH.

The Conference was opened by a Civic Welcome om the Deputy Mayor, after which Sir GEORGE EWMAN (Chief Medical Officer to the Ministry of ealth) delivered the brief Presidential Address to the nference which we were able to publish last week. mediately thereon the Conference got to business, e first Session, devoted to the Social Aspects of eumatism, being opened by the President of the ssion, Lord DAWSON.

FIRST SESSION—SOCIAL ASPECTS.

After a few introductory words from Lord DAWSON, e first paper was read by Sir WALTER KINNEAR ntroller to the Insurance Department of the nistry of Health), who dealt in a clear and eresting manner with the problem of the cost to e country of industrial rheumatism. This paper, ich is published on p. 1001 of this issue of THE NCET, revealed what a burden both to themselves d to the community are our large number of umatic subjects, and proved how urgently needed s the attempt of the Conference to arrive at some finite conclusions regarding ætiology and the propriate methods of prevention and relief.

Sir Walter Kinnear was followed by Dr. H. B. ACKENBURY (Chairman of Council, B.M.A.), who oke on the need for the organisation of the facilities treatment for the whole population. These ilities included: (1) the discovery and elimination any infected foci; (2) the administration of drugs; d (3) the use of various physical agencies and thods. "The right case must be got to the right ce for the right purpose." Dr. Brackenbury erred to the work which had been done in Holland d in post-war Germany towards this end. He thered that these continental organisations were not any means perfect but that we had something to rn from their experience. In this country specialist vice was only at the disposal of a small percentage insured persons, and it should be made part of the tutory medical benefit as soon as possible. Two actical schemes for the organisation of rheumatic atment were before the public in this country—, that of the British Red Cross Society and that the British Spa Federation. In order to secure the arty support of the medical profession these schemes ould be united and should conform to certain quirements—e.g.: (1) no patient should be ated except on the recommendation of a medical actitioner; (2) patients, who could easily obtain e requisite treatment should be refused; (3) the conditions should envisage the possibility of a patient obtaining advice at the consulting-room of a specialist instead of at an institution; and (4) there should be suitable opportunity for practitioners to observe and obtain experience of the methods employed and their results. Such organised schemes would afford opportunities for the clinical and pathological observation and research which were essential for success in combating this baffling and obstinate national scourge.

Dr. J. VAN BREEMEN (Holland), Hon. Secretary, International Committee on Rheumatism, spoke on the types of rheumatic disorders which were most prevalent in Holland. He said that official statistical data on rheumatism were an unknown quantity in Holland, and that the scientific study of the social campaigns against rheumatism were still in their infancy. He submitted a table with regard to 832 male and 1046 female rheumatic patients, attending the Rheumatism Consulting Bureau at Amsterdam during 1927, classified according to the type of their disease. He thought that acute rheumatism was comparatively rare in Holland, as also heart disease and chronic joint disease following acute rheumatism. The number of children, who had died in Holland of acute endocarditis and myocarditis between the ages of 5 and 14 appeared to be much less proportionately than the corresponding fatalities in Great Britain. Gout was also rare in Holland, though the old French Huguenot families often showed the arthritic diathesis in a pronounced degree. He found that affections of the knee-joint were strikingly more frequent in women than in men, and that the shoulder-joint was more frequently affected in men. Arthritis deformans, the equivalent of rheumatoid arthritis, was not very frequent in Holland, and his impression from studies in England was that the cases in England were more numerous and more severe. Cases of sciatica over the age of 50, sent to him, were often really osteo-arthritis of the hip-joint. Arthritis of the spine was seldom recognised and was more common than was formerly thought, though its prognosis was less grave. The strict separation of spondylitis deformans and rhizomelic spondylosis (complete vertical ankylosis) was frequently impossible. Arthritis of the spine generally occurred in men and he had never seen the rhizomelic forms in women. He considered that the influence of occupation in producing rheumatic affections would be one of the great medical problems of the future. The statistics of the "Councils of Labour" (Raden van Arbeid) showed that only about one-tenth of the working people invalided by chronic rheumatic diseases were medically treated. He hoped that within the next few years it would be possible to furnish official statistics with regard to all rheumatic affections in Holland.

Dr. J. ALISON GLOVER gave particulars from the Ministry of Health's inquiry, which had reference to a sample population of about 90,000 insured persons, and indicated that the percentage of the total sickness caused by rheumatic diseases was about 16·8 for males and 14·4 for females. The lower percentage among women was due to the younger age of the insured women, owing to matrimony and other reasons. The Leipzig statistics, published in 1907, seemed to indicate that rheumatic diseases were quite as common in Germany as in England, and this impression was confirmed by the more recent figures given by Sommerfeld for Berlin. The fact that the incidence of acute rheumatism was undoubtedly declining in our country was one of the bright spots of the problem. Dr. Lambert had shown that this decline was also occurring in the experience of the New York hospitals. The figures for our Navy from 1907 to 1923 showed a great decline in rheumatic fever, out of all proportion to the slight fall in the incidence of tonsillitis. These figures, however, referred to frank rheumatic fever, and gave no idea of the incidence of other manifestations of the rheumatic infection in children, which were almost equally important from the point of view of the

production of heart disease. Probably 1 in 50 of the children attending the public elementary schools required observation and periodic examination on account of some rheumatic manifestation. Dr. Glover, who showed diagrams which indicated the attack-rate at various ages in both sexes from fibrositis and arthritis, referred to the marked effect of occupation upon the incidence of rheumatic diseases and specially referred to the observation of van Breemen that every special trade had its own rheumatic "deviation." So far our Ministry's investigation had only brought out the fact of the special incidence of osteo-arthritis upon the workers in the heavy metal trades. The statistics of hospitals showed that they were only able to admit and treat a very small percentage of the cases of chronic arthritis, and further institutional treatment was obviously needed to provide accurate attention to septic foci, and the intensive local and physical treatment which might be given at a spa hospital or an out-patient clinic. The number of insured patients suffering from chronic arthritis was only half that of those who suffered from fibrositis, but the longer period of disablement caused by the former made the two equal in causing disablement. Thus the drain upon the National Health Insurance funds for sickness and disablement benefit caused by rheumatic diseases was at least one-seventh of the whole, one-half of which was due to chronic arthritis.

Dr. R. G. GORDON (Bath) laid emphasis on the fact that in almost every case of chronic rheumatic disease the skin is at fault in some way or another. Sweat secretion depended upon the sensory stimuli impinging on the skin, a good cutaneous blood-supply, and proper endocrine balance. A humid cold atmosphere made adequate sweating difficult. People who had spent their lives in a tropical climate when they returned to this country had lost their power to sweat and frequently developed fibrositis and panniculitis. Fatigue was an important factor. As an example of local strain, we had the lumbago of gardeners, the fibrositis of the shoulders and backs of miners, and the osteoarthritis of the hips in those who had ridden and hunted much, but general fatigue markedly influenced the endocrine system and through it the action of the skin. In treating chronic rheumatism it was necessary to find the fatigue limit of the patients and to keep them within it. Emotion, worry, and depression also affected the endocrine system and the action of the skin.

Dr. HANS JANSEN (Copenhagen) said there were no statistics available as to the relative prevalence of rheumatic diseases in Denmark.

A further important paper was read to the Session by Dr. REGINALD MILLER, which will be found on p. 1005. This paper dealt with the influence of environment on rheumatic infection in childhood, and its conclusions formed the topic of comment in many of the communications which followed.

Lord DAWSON closed the debate with a short reflection on the general messages conveyed by the speakers. Alluding to the incidence of fatigue, he said that everyone, and not only medical men, recognised the magnitude of the evil caused by chronic rheumatism among workers, adding that it was necessary not merely to think of the many days of sickness and the heavy loss of life, but also to think of its affecting the quality of life. It was clear that environment played a prominent part in the production of rheumatism and the allied sequelæ, though occupation played its part, as had been shown by the speaker who had pointed out how metal workers were particularly subject to rheumatic diseases. And while he deplored the idea that they should be characterised as poverty diseases only, he urged the importance of the improvement of housing, of the methods of domestic life, of good clothes, and of the open-air life. While strongly advocating the value of recreation, and of playing rather than watching games, and of guarding against anything like fatigue, he ventured to raise the issue as to whether the rigid idea of the eight-hour day was wise, and thought it might be better to have occasionally a longe working day, properly alternated with a shorte provided the average of the eight-hour day was n exceeded during the week.

FRIDAY, MAY 11TH.

SECOND SESSION—CAUSATION.

The second session of the Congress was opene punctually at 9.30 A.M. by Sir HUMPHRY ROLLESTO who delivered the following

Presidential Address.

To begin with, he asked the Conference to consid what were the connecting links or common ætiologic factors in the rheumatic disorders. At one end of t scale was acute rheumatic fever whilst at the oth was osteo-arthritis, largely a degenerative disea Between these two extremes was a chain of gradu transitions, but clinically the main distinction w between the acute and subacute forms of disea prone to damage the heart and to react to salicylat and the chronic forms, permanently damaging t joints, but seldom, if ever, the heart, and irresponsi to salicylates. Did chronic joint inflammation devel often enough in persons formerly attacked by rhe matic fever to suggest that the two diseases were d to the same infection, or was the sequence mo credibly explained by the supposition of a gene arthritic diathesis? The characteristic lesion rheumatic fever, including chorea, was the formati of nodules, large in the subcutaneous tissues, su miliary in the heart. These also occurred in rheumat arthritis, but had rarely been reported in oth disorders. The submiliary nodules in the myocardiu (often called Aschoff's bodies) were generally regard as pathognomonic of acute rheumatic infectio though Geipel and Butterfield dissented and Cow and Ritchie stated that they occurred in most of t acute infections. Nodules of this kind were found the pericardium, cardiac valves, synovial membran of the joints; Coombs had described changes in t aorta and nodular periarteritis (1908–09), and Klo has commonly found arterial lesions in acute rhe matism—an inviting subject for further research.

According to Coates and Coombs the histologi structure of the subcutaneous nodule in rheumat arthritis and Still's disease was the same as Aschoff's submiliary nodules in the myocardium.

Subcutaneous nodules had been often found rheumatoid arthritis and osteo-arthritis, which Hawthorne to say in 1912 that "either rheumat arthritis is rheumatism or the development of fibr tumours in the subcutaneous tissues is not a spec note of rheumatism." But Sir Humphry Rolles had not found any evidence of submiliary nodu in the heart in chronic rheumatoid arthritis. Fib sitis, which was the non-arthritic form of chro rheumatism and might have the local habitation a name of panniculitis, was also accompanied by nodu formation, though in this condition the thickeni were not so histologically characteristic as rheumatic nodule. As Stockman and Weber l pointed out, panniculitis, like fibrositis and fib myositis, might arise from various causes.

The much debated streptococcal nature of ac rheumatism, first raised by Poynton and Paine in 19 had, in spite of much criticism, been steadily gain ground. Recently Small had described as the spec cause a non-hæmolytic streptococcus, differing fr the *viridans* group in its cultural characters, under name of *Streptococcus cardio-arthritidis*. His spec treatment with antiserum and vaccine of 72 ac rheumatic, 25 choreic, and 40 chronic rheumat cases had given encouraging and significant resu There was a widespread impression that chr rheumatoid arthritis and its allies were due streptococcal infection, though Warren Crowe incri nated *Staphylococcus albus*, type D, for rheumati arthritis and streptococci for osteo-arthritis non-articular rheumatism. It might be argued t the various members of the rheumatic diseases v streptococcal in origin, their clinical and struct

ifferences depending on (*a*) variations in the "seed," nd (*b*) inborn or acquired differences in the soil—amely, the constitution, endocrine, and other factors. he non-infective origin of chronic articular lesions, ıch as metabolic anomalies in alkaptonuria, in the ·ophic (e.g., Charcot's arthropathy), and psoriatic ›rms might still be a matter for discussion, and in ıese, at any rate, it seemed that, if there were bacterial ıvasion, it was secondary and subordinate in import-nce. In both the acute rheumatic and the chronic ıeumatoid forms hereditary constitution or an arthritic diathesis" must be considered to play a art. Inadequacy of the thyroid had been specially ut forward, but ovarian and pluriglandular inefficiency ad also been regarded as responsible. Pemberton had sisted on the low sugar-tolerance of chronic arthritics ıd ascribed this to diminished circulation of blood in ıe muscles. But the possibility should be borne in ind that both the disturbed endocrine function and ıe arthritic manifestations were due to infection; ›r example, the correspondence between the geo-·aphical distribution of endemic goitre and of ıeumatoid arthritis (McCarrison) might be explained ; different results of an underlying infection. In escribing the loss of sulphur in chronic rheumatic ·thritis Cawadias concluded that the toxic and fective, and even physical factors, such as damp, sponsible for rheumatoid arthritis first acted on the ·gans—liver, thyroid, and autonomic nervous ·stem—regulating metabolism. On the whole it ight be reasonable to suggest that varying degrees diminished constitutional resistance of the fibrous ssues or of sensitisation to infection on the one hand, ıd on the other hand the action of different kinds streptococci might explain the different clinical anifestations seen among the diseases grouped for ›nvenience under the heading of rheumatism.

Dr. C. WILFRED VINING (professor of children's seases, University of Leeds) described an investi-ıtion carried out in Leeds, by Dr. Wear, by the ıildren's almoner of the infirmary, Miss Finlay, ıd others, which confirmed his view that the ank rheumatic child is a child suffering from toxic ·bility with added rheumatic infection. He gave ırticulars of the symptoms of the "toxic debility" ıildren, including nervous instability, limb pains, ·adache, listlessness, and anæmia, and pointed out ıat some 25 per cent. of the child population belonging the social sphere from which rheumatism chiefly ›mes show these phenomena more or less. These toxic debility" children exhibit certain intestinal mptoms associated with mucus in excess and embranous material in the stools. The actually eumatic children suffer in the same way. Prof. ining was impressed with the similarity of the mptoms shown by these sufferers and by McCarrison's onkeys and pigeons fed on diets deficient in tamin B. He considered that a dietetic theory plains why rheumatism does not appear until ›r 5 years of age—that is to say, the dietetic deficiency kes some years to break down the defence. He found e family incidence of both toxic debility and eumatism easily explained by the family diet. ı Leeds he had found nothing to support the belief at damp plays an important part in rousing the eumatic infection to activity. On a recent visit to olland he understood from Dutch medical men, ho were also school medical officers, that, while ıorea, joint rheumatism, and cardiac affections were re in Holland, enlarged tonsils and adenoids were tremely common. He concluded that most children ho develop clinical rheumatism have a previous fective health history for months or years, which is ›ught about by prolonged dietetic deficiency, either vitamin B or in protein in conjunction with excess carbohydrate, or possibly by both these factors. e explained the sequence of events by dividing the ementary school-children into four main groups:) healthy children, comparable to those in other cial spheres; (2) children who are beginning to perience the results of the deficient diet and are ıder weight, with toneless tissues and alimentary canal disturbances; (3) children with added symptoms of toxæmia; (4) children with clinical rheumatism, acute or subacute, the dividing line between groups (3) and (4) being one of massiveness of dose, repetition of dose, or lowering of resistance by some factor or factors unknown. He maintained that if his conception is right we shall not prevent rheumatism by concentrating on damp houses and the removal of tonsils and adenoids, but rather by the provision of a well-balanced diet from infancy onwards. Prof. Vining did not rule out the possible effect of damp houses nor deny that the tonsils may be the portal of entry, but held that an exclusive throat ætiology is not warranted by the evidence at our disposal.

Dr. H. DINGWALL FORDYCE (hon. physician, Royal Liverpool Children's Hospital) expressed himself as largely in agreement with Prof. Vining as to the importance of a proper diet from infancy onwards. Although heredity might be of some importance, we were granted a postnatal interval of opportunity, lasting for several years, in which to develop effective prophylactic measures. Dr. Fordyce gave, as three important predisposing factors, instability of the nervous system, digestive disorder, and weakness of lymphoid defence, and sketched some of the home conditions likely to conduce to these factors. He considered that child welfare work, by its educational influence, had been one of the chief causes of the decline of acute rheumatism. A close coöperation was needed between the administrators and the clinical physicians. If we had at our command more beds in country hospitals and suitable residential schools he felt that the results would be remarkable.

Dr. CAREY F. COOMBS (physician, Bristol General Hospital) in a review of the bacterial position, submitted evidence that rheumatic fever is an infection rather than an intoxication, and that the disease is due to the invasion of the brain, joints, heart, and subcutaneous tissues by streptococci, which are borne thither by the blood stream. He thought we might accept the view that the tonsil is certainly, and the intestinal mucosa possibly, to blame for admitting this virus into the systemic circulation. The type of infection in childhood was, he held, best described as a series of raids, many of which are stealthy—the organisms linger outside the circulation and revisit the circulation from time to time. Dr. Coombs went on to refer to the work of Homer Swift and others which suggested that rheumatic patients showed a group sensitiveness to streptococcic toxins. This would explain why *Streptococcus viridans* succeeded in implanting itself on valves already injured by the rheumatic streptococci, and also the remarkable relation between scarlet fever and rheumatic infection. In spite of the fact that rheumatic infection in childhood created a form of sensitisation, a tide of immunity set in after a certain age, and possibly 30 per cent. of affected children recovered and acquired this immunity. The fact that the injuries inflicted conformed closely to a certain pattern was due rather to constancy on the part of extraneous influences than to the specificity of the streptococcus. The difference between the naturally acquired lesions in man and the lesions caused experimentally in animals was probably due to these extraneous influences. In a child the infection appeared to enter by a succession of small doses, perhaps through a mucous membrane, while in the animal, infection, perhaps enhanced by sojourn in the human body, was injected directly into the circulation. The latent chorea described by R. Miller, the granules found by V. Coates and Thomas, the pre-rheumatic state of which Vining has written, and the mitral stenosis only discovered in adult life were all explicable by the escape into the body of minute doses of bacteria.

Dr. RALPH STOCKMAN (professor of materia medica and therapeutics, University of Glasgow) dealt with the causation of fibrositis and panniculitis, which he described as really the sequelæ of various preceding diseases. He illustrated by lantern slides the gradual formation of a definite fibrous tissue from the loose soft texture with a sero-fibrinous matrix, resulting from the exudation of serum and proliferation of

fibroblasts, the common reaction to bacterial and chemical irritants. What happened in muscular rheumatism and panniculitis did not differ essentially from the histology of infected wounds with painful adhesions, thickened pleura, and cirrhosis of the liver. In fibrositis the irritant was most commonly a bacterial toxin produced on the site by a colony of microbes or possibly carried from a distance by the blood stream. Fibrositic patches might affect one area of the body only or be widespread, and in some localities took the form of pea-like masses with a core of inflamed fibrous tissue surrounded by fat. In the early stage these little swellings might disappear or be dispersed by massage. He regarded cold and wet as exacerbating factors of lesions already present rather than as causes of chronic rheumatism. He did not consider changes in the activity of the endocrine glands a cause of panniculitis. Increase in adiposity was apt to occur at the menopause and tension or pressure increased the sufferings of women who were already the subjects of subcutaneous fibrositis.

Dr. W. LANGDON BROWN (physician to St. Bartholomew's Hospital) dealt with the endocrine factor and thought we might confine our attention to the thyroid and ovaries. He agreed with the pioneer Hertoghe, whose recent death was a real loss to the profession, that it was most important to look for indications of hypothyroidism. He also agreed with Llewellyn that hyperthyroidism might be operative and that thyroid instability was the important thing. There might be a background of hypothyroidism with spurts of hyperthyroidism. Lack of iodine was a feature in both. Tonsillar sepsis was associated with thyroid derangement. Studies of the blood-sugar in rheumatism would throw light on the endocrine factor. The thyroid gland mobilises the sugar into the blood stream, whilst insulin leads to the storage of sugar as glycogen in the liver and muscles. Insulin might be useful for rheumatic hyperpyrexia. Thyroid inadequacy might be the inherited factor in rheumatism. Iodine was useful both for rheumatism and goitre. The thyroid and tonsils were only factors—not the whole story. The ovaries might have an effect at puberty and the menopause and act through the thyroid. The condition of the thyroid was the chief endocrine factor in rheumatism and rheumatoid affections.

Dr. GEOFFREY HADFIELD (demonstrator of pathology, University of Bristol) discussed the specificity of the tissue reactions in rheumatic diseases, and referred to the subcutaneous millet seed granules of Vincent Coates. These, he said, were composed of proliferating reticulo-endothelium, were rich in newly formed capillaries, and presented similarity to what was supposed to be the primary tissue reaction in the infective arthritic group. The granules were the classical nodules in miniature. This reaction, while not so spectacular as the giant-cell system of tubercle, was as constant as that of gumma formation. There was little difference between the early skin nodule of infective arthritis and the submiliary myocardial nodule of acute rheumatism. In panniculitis the reaction was not exclusively confined to the local reticulo-endothelium, as in acute rheumatism and infective arthritis, and this dissimilarity indicated a more virulent infection or a lessened local immunity in panniculitis. Much more work was needed, but up to now the infection of chronic infective arthritis appeared to be one by a saprophytic streptococcus to which the patient had a high degree of general immunity but a low degree of local immunity in the synovia of his joints.

Dr. P. LAZARUS-BARLOW described work which he had done with Small's streptococcus cardio-arthritidis.

Prof. ISIDORE GUNZBURG (Medical Director) laid emphasis on the bad state of the skin as a causative factor.

Prof. TOM HARE (Royal Veterinary College) described the types of rheumatic disease prevalent in animals and the research work as to ætiology in progress. In horses and dogs we had rheumatic disease, the natural course of which is within the experimental period and which can be terminated at any stage at the will of the investigator. The investigation of this disease in its pathogenic phases offered great possibilities of advancing our knowledge of rheumatic disease in man.

Dr. L. BERTRAND (Antwerp) described work done with a polymorphic anaerobic organism discovered 30 years ago, which sometimes took the diplococcal form. If the proper technique was employed it was to be found in rheumatic lesions, and its changes under culture perhaps accounted for its varying effects on human tissue. A vaccine made from it was efficacious.

Dr. R. WATERHOUSE (Bath) thought rheumatoid arthritis and osteo-arthritis had little in common. Heberden's nodes were found more in the well-to-do than in the poor.

Dr. J. B. BURT (Buxton) believed the investigation of arthritis in animals would be helpful. One in 5 cab horses had arthritis. Trauma alone would cause it; the position of osteophytes was determined by strain and heredity—e.g., a short pastern, had its effect.

Surgeon Vice-Admiral GASKELL, R.N., said acute rheumatism was now very rare in the navy. There had also been a decline in chronic rheumatism, but they had not yet found any lessening of the prevalence of heart disease of rheumatic origin.

Dr. F. G. THOMSON (Bath) showed that Graves' disease and infective arthritis had a similar age curve, chiefly from 16 to 40 years. Chronic villous arthritis of the menopause was always associated with thyroid deficiency.

Dr. WATSON-WILLIAMS (Bristol) thought endocrine imbalance was the result and not the cause of these chronic infections.

Dr. G. L. KERR PRINGLE (Harrogate) said the atrophic type of rheumatoid arthritis only occurred in females. It might be associated with the beginning of menstruation. Pregnancy relieved it, but it returned at the puerperium. It began in the small joints, was centripetal and symmetrical. Diathermy of the ovaries probably removed the endocrine imbalance.

Dr. HENRY ELLIS (London) stressed the importance of biochemistry and the acid-base equilibrium of the urine. Endocrine rheumatism caused no alteration in this equilibrium. The cases with excess of uric acid were a special type. The alkaline and acid types were hereditary and needed different treatment.

Dr. A. P. CAWADIAS (London) referred to the sulphur metabolism in arthritis deformans—i.e., rheumatoid arthritis—and said more study of the metabolic changes was needed.

Dr. F. B. S. HOLMES (Bury) referred to 50 cases of afebrile chronic arthritis, all able to stand upright in whom the basal metabolism was normal. Nevertheless we knew that thyroid benefited such cases.

Prof. PISANI (Florence) referred to acute rheumatism as a germ disease and to chronic forms as largely due to endocrine and sympathetic disturbances and anaphylaxis.

Dr. LANGDON BROWN, in replying upon the discussion, insisted that there must be no undue stressing of the endocrine and metabolic factors and that the infective theory still ranks high.

Communications, which will be published with the proceedings, were also submitted by authors unable to be present—viz., by Dr. GUNNAR KAHLMETER (Stockholm) on the prognostic value of the rate of sedimentation of the erythrocytes; by Prof. H. STRAUSS (Berlin) to the effect that endocrine factors are not truly causal; by Dr. HOMER SWIFT (New York) on rheumatic fever as a manifestation of hypersensitiveness to streptococci; by Dr. RALPH PEMBERTON (Philadelphia) on stasis of the capillary circulation and delayed sugar removal; by Dr. J. GORDON WATSON (Bath) on the hepatic and pancreatic functions in chronic rheumatic diseases; and by Mr. A. G. TIMBRELL FISHER (London) on the pathology of chronic arthritis with special reference to osteo-arthritis.

To this Session of the Conference there was also communicated an interesting paper dealing with

eumatic fever, viewed as essentially a cardiac oblem, contributed by Dr. Weil, of Paris, and Dr. Bezançon, which is published in another column.

THIRD SESSION—TREATMENT.

The Third Session commenced punctually at o'clock with brief introductory words from r FARQUHAR BUZZARD, who called upon

Dr. R. L. J. LLEWELLYN (Member of the Committee the Medical Research Council on Chronic Rheuatism) to read his paper on Prevention. Dr. lewellyn related the classification of rheumatic seases adopted by the Ministry of Health, which, ith other considerations, he thought supplied a good asis for provisional working, though a change in ttitude was required in respect of treatment; there ould be less dwelling on "end-results" and more ress laid on "beginnings." He insisted on the nportance of considering rheumatic diseases from the hysiological standpoint, and advocated investigation abnormalities in sweat secretion, believing that the aintenance of the skin in its functional efficiency was essential importance. In this connexion he urged rly resort to spa treatment, as detoxication could us be effected and the blood-supply of the skin d the sweat secretion could be stabilised.

Dr. F. J. POYNTON (physician to University College ospital) gave his reasons for thinking that salicylate soda is not a specific for acute rheumatism in ildhood in the same sense that quinine is for malaria; though it relieved the joint pains it did not seem to fluence the subcutaneous nodules or to benefit e heart. Further, he thought its use, if pushed, was stinctly dangerous, especially in fragile children with vere carditis. The dangers which he feared, and hich he attributed to the drug rather than to the ness, were death from coma or excessive vomiting, tense depression, pronounced cardiac weakness, and ossibly œdema of the lungs. He had now used tolysin" for four years and had found it to be a fe drug, even in cases of severe pancarditis, and with action comparable to that of the salicylates on eumatic symptoms. He usually gave from 30 to grains in the 24 hours to young children. Dr. Poynton mmunicated notes of cases illustrating the effect of lysin.

Dr. A. P. THOMSON (physician to the Children's ospital, Birmingham) gave the requirements of the dinary rheumatic child as: (1) hospital treatment in e acute stage, for perhaps six weeks; (2) treatment in convalescent home, mostly at rest in bed, for a eriod varying from 1 to 6 months; (3) treatment in institution hospital in which the child's return activity is regulated under careful supervision. askerville School, in the suburbs of Birmingham, as such an institution and 7 years' experience of it d convinced him of its value and shown that the verage case needed a stay of 9 months. The eatment of rheumatism must not be cut off from e hospitals and the school of recovery could be ked up, as had been done in Birmingham, by having common medical staff. Baskerville was a "special ducation" school and education was helpful to eatment. Support from the public funds was needed r the establishment of such institutions throughout e country. Dr. Thomson described details of anagement and showed lantern slides of the school work.

Sir WILLIAM WILLCOX (physician to St. Mary's ospital) read a communication on the treatment of nderlying infection in all the diseases comprised by e terms: (1) acute and subacute rheumatism: and) infective rheumatism, the latter term covering acute fective arthritis, fibrositis, and chronic arthritis. e analysed the arguments for the various directions treatment, and in discussing special biological easures issued a grave warning against the abuse vaccine therapy although pointing out the value of accines when properly administered. He concluded y noting that vaccines can with advantage be mbined with other methods of treatment.

Dr. J. CAMPBELL MCCLURE (physician to the French Hospital) spoke as one not now engaged in supervising physical treatment but rather as one who saw many cases before and after physical treatment. The best results, he said, were obtained by a combination of methods, and the choice of the proper combination was no easy matter and demanded an intimate knowledge of the conditions underlying the lesions treated and a very practical knowledge of the best methods of physiotherapy. Physical methods were of great value and disbelief in their efficacy had been caused by unskilful application and unwise prescription. For example, massage might be too rough or baths might be too hot, and he had known an obstinate mucous colitis caused by a badly administered Plombières douche in combination with an excessive diet of lactic oats. The attendants needed to be well trained and well directed.

Prof. ISIDORE GUNZBURG described the anti-rheumatic centre established in connexion with the University of Brussels, with its very complete equipment for treatment, consultation, and research, and gave a sketch of the encouraging results obtained although most of the patients came for treatment very late. At the beginning of such a scheme it was perhaps natural that the severest and oldest cases were the first comers. A referendum indicated, he said, that the patients who have ceased to attend have derived considerable benefit. A detailed description of the Antwerp scheme was given in the hope that it would stimulate the creation of centres in all countries and thus help on the international struggle against rheumatism.

Dr. B. WHITCHURCH HOWELL (London) referred to the use of traction and immobilisation and operative procedures for securing stiff painless joints and new joints with a limited mobility, and illustrated his remarks by photographs. For spondylitis rest in the prone position was imperative and manipulation must only be undertaken in the chronic stage, after X ray examination and the certainty that there were no loose osteophytes. Much relief could be given by surgery.

Dr. H. WARREN CROWE (London) believed that vaccines were not more used on account of faulty technique. Some got no result because the dose was too small; others a bad result because the dose was too big. The first principle was to begin with a very small dose; streptococci which were the easiest to grow were often non-pathogenic and the vaccines made from them might be quite inert. Staphylococci were quite as important as streptococci in chronic rheumatic diseases and a focal joint reaction with a staphylococcus should be regarded as specifically incriminating that organism.

Dr. C. W. BUCKLEY (Buxton) said there should be facilities at spas to enable general practitioners to learn about the treatment done.

Dr. VINCENT COATES (hon. medical secretary to the Conference) said obvious foci must be removed, but the systemic nature of the disease must not be lost sight of. The essentials of treatment were the raising of immunity and the correction of biochemical abnormalities. Fractional test-meals, the careful examination of the stools, and the estimation of the blood gave indications for the treatment of achlorhydria, secondary anæmia, and leucopenia, and for the selection of a suitable diet. Joints were too much manipulated; they required splinting in the acute stage. Hydrotherapy was always useful and mud baths were sometimes so.

Dr. A. P. CAWADIAS (London) said that endocrines had a limited use in treatment. He had found colloidal sulphur useful. Auto-vaccines were no better than stock vaccines and all vaccine treatment was shock therapy. Arthritis deformans was not due to one cause but to a conjunction of causes.

Dr. HANS JANSEN (Copenhagen) outlined the forms and combinations of physical treatment which he advocated for the various types of chronic rheumatism.

Dr. DONALD BRIMS (London) explained the technique which he employed for the subdermal injection of oxygen, the application to the skin of emanations of radium and thorium, and the intradermal use of a new entero-antigen, with the protein and microbes removed, consisting only of lipoids and amino-acids. He claimed "amazingly good" results from this treatment in Paris, London, and Croydon.

Dr. WATSON-WILLIAMS (Bristol) described an unusual case where the focus had been postnasal catarrh and advocated a very careful search for foci before having the teeth out. Care was needed to see that only a subsidiary focus had been removed. He thought vaccine treatment was mostly shock therapy.

THE SOCIAL SIDE.

The City of Bath and the local branch of the British Medical Association received the members of the Conference with profuse hospitality. The City had arranged rooms at the various hotels for their numerous guests, while members of the medical profession at Bath showed the same hospitality. The whole organisation of the Baths was placed freely at the disposal of the visitors, and the Pump Room, built round the famous Roman bath, provided, as on many previous occasions, a model centre for the comfortable entertainment of a crowd of guests.

On Thursday evening a dinner was given by the City over which the Deputy Mayor and the Mayoress of Bath presided, and at which all the company had the pleasure of listening to excellent speeches from Sir GEORGE NEWMAN, in returning thanks for the guests and delegates, and from Lord DAWSON, who described the beauties of Bath with real eloquence. Upon this there followed a reception by the Lady Mayoress, and later various entertainments were given, at the close of which many members of the Conference, and not only the youngest among them, proceeded to dance enthusiastically till a late hour.

On Friday the Bath Branch of the British Medical Association were the hosts of the Conference at lunch at the Grand Pump Room Hotel, when Dr. R. G. GORDON, President of the Branch, presided and indicated in his speech of welcome how deeply the Association had at heart such great social medical questions as the incidence of rheumatic diseases. Sir FARQUHAR BUZZARD having replied for the guests, Sir HUMPHRY ROLLESTON proposed the health of Dr. F. G. Thomson, the Chairman of the Conference, after whose reply Dr. GUNZBURG set out the pleasure which the visit had given to himself and all his confrères.

The annual meeting of the Balneological Section of the Royal Society of Medicine was held on Saturday, May 12th, following the Conference, and in connexion with it demonstrations of treatment on appropriate cases were given at the Hot Mineral Baths throughout the early morning. Clinical cases were demonstrated later at the Royal Mineral Water Hospital by Dr. R. Waterhouse (osteo-arthritis), Dr. J. Lindsay (gout), Dr. Vincent Coates (infective arthritis), Dr. R. G. Gordon (fibrositis), and Dr. A. Gordon Watson (sciatica). In the afternoon a motor tour gave the guests an opportunity of seeing Bath thoroughly, its environment, and its historic features. On Sunday there was a service at the Abbey at 11, to which delegates were bidden, and in the afternoon a motor tour of the Mendips was arranged, giving the visitors the chance of seeing the famous Cheddar Gorge.

FRANCES WOOD MEMORIAL PRIZE.—This year the Council of the Royal Statistical Society will again award this prize, of the value of £30, for the best investigation, on statistical lines, of any problem affecting the economic or social conditions of the wage-earning classes. Essays should be sent not later than Oct. 31st to the hon. secretaries of the Royal Statistical Society, at 9, Adelphi-terrace, London, W.C. 2, from whom particulars may be had as to eligibility to compete.

Reviews and Notices of Books.

THE BLOOD-VESSELS OF THE HUMAN SKIN AND THEIR RESPONSES.

By THOMAS LEWIS, M.D., F.R.S., Physician of the Staff of the Medical Research Council; Physician of University College Hospital. London: Shaw and Sons, Ltd. 1927. With 76 figures. Pp. 332. 37*s.* 6*d.*

Harvey raised at least as many problems as he solved in the discovery which we celebrate this week. It is appropriate to draw attention to some of the recent efforts made by a physician-physiologist, whose life-work has been the study of the circulatory mechanism, to throw light on the control of the circulation in the organ most distal from the heart. Much of the work published by Sir Thomas Lewis in this monograph has been carried on with his collaborators over a period of 11 years, and has already appeared in original articles in *Heart* and in the *Journal of Physiology*. These the author has collected not merely with the idea of presenting his observations in a more readable form, but with the purpose of stimulating a wider study and teaching of human physiology.

The ultimate object of his researches is to examine more accurately the various ways in which the blood flow to the skin is controlled, and to account more fully for variations in cutaneous colour. In the introductory chapter, therefore, he gives an account based on the work of Spalteholz, of the anatomy of the blood-vessels of the skin, and describes in detail the methods employed in examining those vessels microscopically, and in studying by means of thermo-electric couples skin temperature and its change in response to various influences. Apart from this, his apparatus and technique are of the simplest order. With keen observation and great ingenuity in constructing experiments, he has studied the pallor of the skin produced, after a latent period by a slight mechanical stimulus, and has proved conclusively that it is due to actual contraction of the minute vessels in response to tension of their walls. He further brings out the surprising fact that the force exerted by these terminal arterioles, capillaries, and small venules is at least equal to, if it does not exceed, any pressure which can be brought to bear on them from the arterial side. If a greater stimulus is applied to the skin, a red instead of a white reaction is produced, due to active dilatation of the minute vessels, and this appears without the intervention of the central nervous system or of a local nervous reflex. Only if the skin is susceptible or the stroke stimulus unusually strong, does there appear surrounding the red line a spreading flush or "flare," the result of dilatation of the strong muscular arterioles by a local axon-reflex. This leads him to the central theme of his monograph, the "triple response" of the skin to injury. The response consists of localised capillary dilatation, the coincident local œdema or wheal which succeeds it, and the surrounding "flare." Whether the injury be mechanical, electrical, chemical, or thermal, the triple vascular reaction is essentially the same. Sir Thomas Lewis examines the factors responsible for the production of the three phases of this complex response, and presents a considerable amount of evidence to show that injury of the skin liberates a substance exerting a local action indistinguishable from that of histamine, on the cutaneous vessels and nerves. He is unable to prove conclusively that it is histamine, and wisely refers to it as the "H-substance." The idea that tissue destruction leads to the production of a histamine-like body is, of course, not novel, for the work of H. H. Dale, W. B. Cannon, and many others has shown that there is a remarkable similarity between wound-shock and the shock resulting from the intravenous injection of histamine. But the fact that the simple response of a healthy human skin to trivial injuries is of a simi-

ıture, though varying in degree, to that following ave destruction of tissue, is of the greatest interest, that it would appear to be the unvarying reply of e cell to injury of any kind. Certain difficulties e inherent in this conception, particularly with gard to slowly acting stimuli such as ultra-violet ght, X rays, radium, bacterial poisons, and certain in irritants such as mustard gas, cantharidin, and loroform. The reaction produced by these irritants latent, taking anything from several hours to several eeks to develop, and it is not very clear at first ght how this could be the result of liberation of the -substance. Sir Thomas Lewis recognises the fficulty, but adduces evidence in support of the view at the fundamental changes are essentially the same in the case of the rapidly acting irritants. The apter on the regulation of blood flow by central rvous channels is arresting in the explanation offered the vaso-dilatation following stimulation of a nsory nerve, which was noted by S. Stricker and nfirmed by W. Bayliss and J. N. Langley. It has en deduced from this phenomenon that vaso-lator fibres accompany the sensory nerves, and that e impulse is carried in the latter antidromically. r Thomas Lewis, however, holds the view, strongly pported by the evidence available, that the anti-omic nerve impulse influences metabolism in the lls of the skin, and releases in the tissue spaces the -substance, which thus indirectly produces vaso-latation. He believes that herpes zoster and rpetiform eruptions are produced by a similar echanism.

These are only a few of the points of interest in this onograph. The physician and surgeon, as well as e physiologist, will find material for reflection and imulation in the observations and experiments on active hyperæmia, skin colour, capillary pulsation, ier's spots, and the development and distribution of orbid skin eruptions. Whether or not the author cceeds in stimulating the study and teaching of man physiology, his observations will certainly ove the basis for investigation in the field of prac-cal medicine, and may indeed play a considerable rt in the development of clinical knowledge of seases of the circulation and of the skin. The bt which clinical medicine already owes to Sir homas Lewis for advancing our understanding of sorders of the action of the heart is great; the inical scope of his present line of work is no less wide.

HE MEDICAL ANNUAL, 1928.

Forty-sixth year. Bristol: John Wright and Sons, Ltd; London: Simpkin, Marshall, Ltd. Pp. 632. 20*s*.

'Année Médicale Pratique, 1928. Seventh year. Edited by Dr. CAMILLE LIAN, Professeur Agrégé à la Faculté; Médecin de l'Hôpital Tenon. Paris: René Lépine. Pp. 652.

THE function of a medical annual is to provide aders who have not been able to keep in full touch ith current medical literature with an accessible view of all important events of the preceding ear. The "Medical Annual" maintains its high andard of excellence, in subject matter and in the earness with which that matter is arranged and dexed. The most important feature is the Dictionary Practical Medicine, which embodies abstracts the most valuable recent papers on treatment. he editors naturally give first place this year to ver treatment of pernicious anæmia, the two articles ı which, by Prof. F. R. Fraser and Dr. I. J. Davies, rm as compact and comprehensive an essay on the bject as any practitioner could wish for. Dr. enry Devine describes narcosan, a new remedy for cohol and drug addiction, which consists of a ixture of vegetable lipoids and vitamins and has ven promising results; Dr. Davies contributes review of the present position of knowledge about e vitamins. On the surgical side comment is ade on the use of large doses of anti-gas gangrene serum against appendicitis with peritonitis and in intestinal obstruction, on the assumption that these complaints are due to the action of *B. welchii*. A successful case of ligature of the abdominal aorta is recorded, and an article by Sir William Wheeler describes the operation of division of the scalenus anticus muscle to relieve pressure on the brachial plexus by cervical rib. A section on the surgical diseases of children has been introduced, and deals, among other subjects, with a new inflation treatment without operation for intussusception, and with some claims made by South American surgeons for extraordinarily quick cures in bone tuberculosis. Besides the index, the Annual also contains descriptions of new pharmaceutical and dietetic products, instruments, and appliances, plentifully illustrated; a classified list of books on medical subjects published last year, and the usual gazetteer of mental institutions, spas, and periodicals. It is a reference book used and valued by medical men in every part of the Empire.

"L'Année Médicale Pratique" is a Frencn attempt to meet the same need. It was to have appeared first in the autumn of 1914, but was delayed by the war until 1922. It contains a digest of recent medical work in all languages, together with miscellaneous information, and improves every year. Its scope is not yet as wide as that of the older publication, but since the outlook of its editor has a different focus, the British reader will find much to interest him in its pages.

DIFFERENTIAL DIAGNOSIS IN NEUROLOGY.

Praktische Differentialdiagnostik für Ärzte und Studierende. Edited by Prof. Dr. G. HONIGMANN, Giessen. Bd. II. Neurologie. Teil 2. Psychoneurosen, Funktionelle Neurosen, Erschöpfungszustände. By Dr. W. UNGER, Superintendent of the Hohenpeissenberg Sanatorium. Dresden and Leipzig: Theodor Steinkopff. 1927. Pp. 161–300. R.M.8.

THIS instalment of the large vade-mecum of differential diagnosis for practitioners, edited by Prof. Honigmann, contains sections dealing with neuroses of all kinds, ranging from conditions of fatigue and constitutional neuropathic states to migraine, epilepsy, and affections of the sympathetic nervous system. A useful division of the book examines the diagnostic significance of a number of syndromes and symptoms, such as headache, disorders of sleep, fits and attacks of various kinds, "weakness," and sexual impairment. As befits a text-book of this kind, the descriptions are brief (in some instances almost to sketchiness), succinct, and eminently practical.

A FRENCH TUBERCULOSIS VADE-MECUM.

Tuberculose pulmonaire, Tuberculose des séreuses. By Dr. PIERRE PRUVOST. Paris: Librairie Octave Doin. 1927. Pp. 448. Fr.30.

THIS book is a squat little volume in a series of Daily Consultations, evidently intended for carrying in the pocket or handbag of the busy general practitioner. It is divided up into small sections and paragraphs with headings in black type heavily underlined, and italics are freely used throughout for purposes of emphasis. There is hardly a redundant word in the book; everything, including the illustrations, appears to have been sacrificed to the multum-in-parvo ideal. The illustrations are in some cases ingeniously devised to show all that is essential at a glance, but much has been sacrificed to the odd format. Prescriptions are fairly numerous; there is a short chapter illustrating graphic representation of physical signs, and a list of hospitals, sanatoria (public and private), preventoria, schools, and isolation institutions to which the French practitioner may send his patients. The information on the clinical side is succinct and pithy, but the pathological teaching is meagre.

MINOR SURGERY AND BANDAGING.

Nineteenth edition. By GWYNNE WILLIAMS, M.S., F.R.C.S., University College Hospital. London: J. and A. Churchill. 1927. Pp. 424. 10s.

THIS handbook has reached such an established position that comment is scarcely necessary, but we must congratulate its author on the way in which he has brought it up to date and yet kept it within its original convenient compass. The house surgeon can turn to it for the latest hints on the putting-up of a fractured femur or the treatment of a burn, and if he has progressive ideas he will be delighted to find a brief, but useful, account of the methods of local anæsthesia. We cannot imagine a handbook of greater use to the embryo surgeon, and there are few who practise that art who would not get valuable hints from its pages.

JOURNALS.

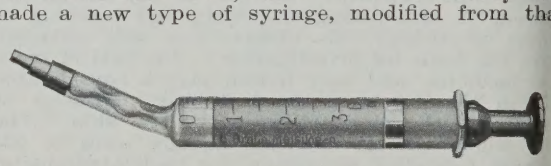
AMERICAN REVIEW OF TUBERCULOSIS. March, 1928. Vol. XVII., No. 3.—Dr. Henry Willis reports the result of experiments carried out on guinea-pigs to determine the duration of cutaneous hypersensitiveness to tuberculin following inoculations with bacilli of low virulence, and to investigate the relation of tuberculo-immunity to tuberculo-allergy. A group of guinea-pigs was submitted to subcutaneous inoculation with an emulsion of tubercle bacilli. At the end of a year the animals were all found to be healthy and for the purposes of the experiment were regarded as "immunes," a number of non-infected controls being reserved as "non-immunes." Observations were made on the result of cutaneous tests carried out at intervals beginning at the twelfth and terminating at the thirtieth month after the original inoculations. Further experiments were made to determine the degree of immunity persisting to the end of the period of the experiment. The results support the view that allergy fluctuates with the course of infection and that as infection subsides allergy diminishes. Two years after infection allergy could not be demonstrated by an injection double that of the ordinary reacting dose of antigen. Nevertheless, that some degree of allergy may persist for an even longer period was shown by evidence of hypersensitiveness, which was revealed by a dose of five times the normal standard given 27 months after the original infection. Dr. Willis found that a high degree of immunity might accompany a degree of allergy barely demonstrable. A new infection with a virulent strain of bacilli was capable, however, of restoring allergy at once to a high level. Thus an allergy which has become "latent" may be quickly revived in response to infection. It is possible, therefore, that immunity may also become "latent" and be capable of revival in a similar manner, both allergy and immunity responding to the same stimulus in the same way.—Dr. Casper F. Hegner, in a paper on Surgical Rest in Pulmonary Tuberculosis, summarises the means at our disposal to secure this, and outlines the indications for their use. Phrenic avulsion, extra- and intra-pleural pneumolysis, limited and complete thoracoplasty are briefly described. Dr. Hegner gives a warning that to be of value in pulmonary tuberculosis the aid of surgery must be invoked before the patient's reserve is depleted. Phrenic avulsion is recommended as a valuable adjunct to induced pneumothorax. Stasis of blood and lymph within the lung and paralysis of the diaphragm cause a restriction of gas-absorption from the pleural space and the necessity for refills is thus less frequent. Phrenic avulsion by lessening the work of one lung throws an added strain on its fellow. When thoracoplasty or other surgical procedure is under consideration and a doubt exists as to the condition of the opposite lung, phrenic avulsion, carried out on the extensively diseased side, may thus be used to test the capacity of the other lung to sustain respiration. Intrapleural pneumolysis by the method of Jacobaeus entails grave risks from hæmorrhage, empyema, and the bronchial or pleural fistula, and is not recommended. Dr. Hegner usually employs local anæsthesia when operating for thoracoplasty. With this method the condition of the patient can be better gauged during operation, the cough reflex is not inhibited, aspiration of secretion is avoided, there is less oozing of blood and the immediate post-operative phase is much better.—A contribution on the behaviour of white blood cells in tuberculosis was summarised last week on p. 976.

FUKUOKA ACTA MEDICA.—The issue of January, 1928, the first of Vol. XXI., contains the conclusion of Dr. H. Kokawa's work on experimental trypanosomiasis with special reference to the mechanism of trypanolysis. Dr. R. Hattori continues his study of the blood picture in artificial malaria and makes some observations on the occurrence of spirochætes in progressive paralysis. The other articles are from the pens of S. Ohmori on certain interesting anatomical points in the bird's heart; H. Tsunoda on the causes of the rise of venous pressure in pneumothorax, and J. Uegaki on a hæmo-proteus occurring in Formosa. While the journal is printed in Japanese characters, précis of the papers appear in German, French, or English as the case may be.

New Inventions.

AN IMPROVED SYRINGE FOR THE TREATMENT OF VARICOSE VEINS.

AFTER 75 years of varying fortunes, the successful treatment of varicose veins by the injection of sclerosing media is now receiving the recognition it deserves. There is still room for improvement in the instruments used, and we have recently had made a new type of syringe, modified from that



invented by Katz, which appears after a test period of three months to possess definite advantages over the Record syringe hitherto recommended. As will be seen from the accompanying illustration, this syringe has a glass barrel and piston, the former graduated in capacities of one quarter of a cubic centimetre, the latter coloured dark blue (in the actual syringe) for convenience in gauging the amount of a colourless fluid which is to be injected. The lower end of the barrel passes into a fine glass capillary containing two small dilated chambers and bent upon itself so as not to obstruct from view the segment of the vein to be injected. A white, opaque background has been introduced in the length of this tube in order to render the appearance of a minute column of blood more easily visible. The metal nozzle of the syringe, which snugly fits all makes of hypodermic needles, has the same coefficient of expansion as glass, thus readily allowing of sterilisation by boiling. When a vein is entered, blood can be aspirated along the capillary tube into the ampullæ, and when, subsequently, an injection is made, the blood is forced back into the vein, leaving the remaining fluid in the barrel clear and untinged. In this way it is possible to administer to a patient six or more injections without having to change or wash out the syringe.

The instrument is manufactured by Messrs. B. Braun and Co., Ltd., Melsungen, Germany, the makers of the original Katz vein syringe. The English agents are Messrs. Adair, Dutt and Co., 47, Victoria-street, London, S.W. 1.

KATHARINE M. CELLAN-JONES, M.B., B.S. Durh.
C. J. CELLAN-JONES, M.D., F.R.C.S. Edin.

THE LANCET.

LONDON: SATURDAY, MAY 19, 1928.

WILLIAM HARVEY.

THE third centenary of the publication of WILLIAM HARVEY'S "De Motu Cordis" has been celebrated ring the week with ceremony befitting a discovery ich first made rational treatment of human disease ssible. The KING received at Buckingham Palace) delegates representing 28 countries who presented address of homage to the memory of this English- n of science; but to realise his greatness it is essary for the student of medicine to live back o the circumstances of HARVEY'S time. Amid all pomp and circumstance of Monday's pageant let one forget the little dark studious physician who at a table in the Great Hall of St. Bartholomew's spital, writing prescriptions for such patients as uld be brought to him, with the hospital apothecary l matron standing one on each side of his chair. was in these surroundings that HARVEY developed courage of which so many have spoken, a rage which we witness in his standing up against surgeons of his own hospital, in his insistence that h should tell "what he findeth and what he useth every external malady, that so the doctor being ormed may better with judgement order his scriptions." Against this, as NORMAN MOORE has ted, the chirurgeons vigorously protested. HARVEY'S rage did not excite among his contemporaries attention which it deserved, for although his set of the Galenic systemic of the circulation ranks h GALILEO'S upset of the Copernican system of the ternal universe, it did not bring him into conflict h the orthodox religious teaching of his time and was not HARVEY who, murmuring "but it does ve," left the presence of a persecuting Inquisitor. r all that, the detachment which enabled him to strike t from tradition, to discard the teachings of GALEN, ich were then accepted and revered as those of a phet, was courage of no common order. It is, Sir ARTHUR KEITH reminds us, difficult for us derns to visualise the circulation of pre-Harveian nes, when under the physician's finger the artery panded of itself, drawing in blood, spirits, air, and pours of all sorts and squeezing them out again as contracted. Generations of students, brought up on lucid diagram in HUXLEY'S "Elementary Physio- y," will have difficulty in facing the problems of circulation as HARVEY faced them. His discovery me to him with no flash of light, with no startling ributes of a revelation. It was an answer to a ies of logical questions which he put to himself, ich led up to the observation: "I began to think ether there might not be a motion, as it were, in a cle." It was the result, as he says, of demonstra- ns before his colleagues at his College, demonstra- ns repeated again and again until every objection s met and dealt with. It is doubtful if any neration has visualised these crucial experiments in e way that has been made possible by the pictorial n prepared by Sir THOMAS LEWIS and Dr. DALE, a monstration which won the admiration of all those o witnessed it.

Many discoveries have resembled the sudden crystal- ation of an over-saturated solution when a crystal dropped into it; there have been other investigators the point of reaching the same goal at the same time. But HARVEY was far ahead of his fellow workers, both in experiment and interpretation of results. The great VESALIUS, although he could find no holes in the ventricular septum, assumed the passage of humours through it. HARVEY avowed himself a partisan of truth alone, and was so sure of himself and of his observations that he spent no time in controversy, or in refuting the arguments of others. Indeed, as Mr. GEOFFREY KEYNES tells us in the preface to the admirable bibliography which appears for the occasion,[1] HARVEY published only three books during his life, so that the task of compilation has been a simple one. HARVEY'S critics, though vociferous enough in their day, have mostly sunk into an oblivion in which they may be allowed to remain; but no one who wishes to understand the circulation of the blood can safely refrain from reading of its discovery in one or other of the places indicated in the bibliography.

THE BORDERLAND OF PHYSIOLOGY AND PSYCHOLOGY.

MODERN histological methods have taught us much about the structure of the cerebral cortex, but its function has been more difficult to investigate. It forms the borderland between psychology and physiology, and explorers from these two sciences do not yet report their discoveries in a common language. The behaviour of a spinal animal is complex enough, as SHERRINGTON and others have shown, but at least its response to stimuli is uniform and quantitative; whereas the higher reflexes are controlled by rules so obscure that the general impression has been one of anarchy. For a workable method of observing these higher reflexes in animals we are indebted to the school of Prof. IVAN PAVLOV, who gave an account of his most recent work in the Croonian Lecture of the Royal Society, of which we published a summary last week. His invaluable experiments show that the difficulty of prophesying the results of stimulation of the cortex is due less to the complexity of the reflexes than to the great variety of influences which may inhibit response.

The first step in the comprehension of PAVLOV'S work is to realise the distinction between inborn reflexes, characteristic of any species, and acquired reflexes, which are peculiar to the individual and are founded on his own experience. PAVLOV classes the first group as "unconditioned" reflexes, whilst the second are called "conditioned" reflexes, because their nature largely depends upon the conditions under which they are established. Examples of inborn or unconditioned reflexes are the knee-jerk, the stepping reflex, the lower sexual reflex, and salivation at the sight of food. Advantage was taken of this last phenomenon in PAVLOV'S investigations in the dog. He found that if a musical note is regularly sounded at the time when food is presented, salivation is eventually stimulated by the sound alone, in the absence of any food. This is a conditioned reflex since it depends on the special experience acquired by the individual. Such a reflex may be provoked by any form of stimulus—auditory, visual, cutaneous, or olfactory—but it must of course develop out of a reflex mechanism which is already in existence. Furthermore, the time-element is of importance—for example, if in the salivation experiment food were given before the sound, it is obvious that no association would

[1] Bibliography of the Writings of William Harvey. Cambridge University Press. Pp. 67. 21s.

be set up. The underlying principle of the formation of new reflexes is that if during the occurrence of any unconditioned reflex a receptor organ is stimulated, a new path is formed between the receptor and the effector organ. A given stimulus may thus acquire, for the individual in question, a significance which it did not formerly possess; by taking over the mechanism of the unconditioned reflex on which it was based it produces results which may appear irrelevant.

These studies are purely objective. The secretion of saliva, the chief indicator used in the experiments, is particularly suited to such objectivity, and other indicators are similarly treated. The experimental dog cannot be usefully interrogated about his mental experiences, and deductions are avoided as to the presence of sensations or emotions, a knowledge of which rests upon our own introspective observations. The turning of the head in a specific direction is only a turning of the head; no presumption as to awareness is made, for awareness is at present outside the bounds of an objective physiology. By this self-imposed limitation the physiologist provides the psychologist with a means of making comprehensible the fact that stimuli can fall upon a peripheral receptor organ, be analysed by the cortical part of the system, and produce a complex result without the subject being aware of the process of analysis or perhaps even of the stimulus, which has been conditioned by previous experience. It is a commonplace of psycho-pathology that mal-adaptive mechanisms can be brought into play by stimuli that are not perceived by the subject or, if they are perceived, are not consciously brought into relation with the previous conditioning experience. Some phobias arise in this way, and in answer to ordinary questioning the patient is able to throw no more light upon the cortical processes at work than is Prof. PAVLOV'S experimental dog. What is not so generally known, however, is that the symptom may show itself at the physiological level, and there have been described cardiac and asthmatic attacks, or recurrent intestinal disturbances, arising from earlier experiences that have conditioned a complicated reaction derived from a simple inborn reflex. In the human subject it is possible to elucidate these earlier experiences by modern psychological technique and thus study the subjective aspect of conditions that are being simultaneously approached by the objective physiological methods of PAVLOV and of ANREP, his pupil and interpreter. Such a combined attack upon clinical problems may lead to the discovery of a relation between superficially incompatible views. The allergen theory of asthma, for example, appears irreconcilable with that of a psychogenic origin, and yet there is clinical evidence in favour of each of these theories. Given a primary emotional stimulus that produces asthma in the presence of a possible allergic substance, that substance may produce a conditioned reflex and come to be a sufficient stimulus to provoke the exaggerated dyspnœic reaction originally roused by the emotional stimulus. The labile skin reactions known to occur during an asthmatic attack may indicate a physical disposition towards the development of a conditioned reflex dependent upon a chance allergen. This would account for the capriciousness of allergic phenomena, which is otherwise so difficult to bring under any known physiological law. That a consideration of PAVLOV'S work should arouse a suggestion of this kind indicates the prospect that a further connecting link between physiological and psychological medicine is being forged.

THE RHEUMATIC DISEASES.

THE Conference on Rheumatic Diseases at Bath was a genuine success, regarded from every point of view. The medical profession of the city and the civic authorities are alike to be congratulated upon having taken the lead of a great and orderly endeavour to mitigate the evils of a scourge upon our public and our individual health, and so much interest has been aroused by many of the contributions to the debates that we may look forward confidently to this translation into practical form of some of the advice given.

The proceedings of the Conference were arranged in a sequence which indicated exactly the extent of the evils to be counteracted and the multiplicity of forms in which those evils manifest themselves, calling accordingly for prevention and relief in an embarrassing variety of directions. At the first session the speakers presented authoritative descriptions of the social aspect of rheumatic diseases, of their cost to the country, and of the existing methods for organised defence; the general incidence of rheumatic diseases and the influence upon this incidence of the circumstances of environment were debated in such communications as those made by Sir WALTER KINNEAR, the Controller of the Insurance Department of the Ministry of Health, and Dr. REGINALD MILLER, which are published in full in other pages of this issue of THE LANCET. At the second Session of the Conference we obtained an illuminating impression of the vast work that lies ahead before any definite opinions can be arrived at in regard to the comparative importance of the many factors playing their part in ætiology. There were detailed the predisposing circumstances in the rheumatic inflammation of childhood and the possible bacterial association therewith; the position in any orderly scheme of causation occupied by cardiac symptoms; and the reasons for remembering the endocrine influences that might be at work. Further, the pathology of chronic arthritis and fibrositis was reviewed, and especially interesting communications were made in regard to the manifestations of infective arthritis in animals. The contributions were made in almost every case with a sense real of responsibility, the evidence preceding the conclusions.

The manner in which the proceedings were conducted is especially to be commended, for it left no opportunity for a waste of time in fruitless debate. Much of the evidence was taken for granted, and remains for future scrutiny, but the conclusions were given to the Conference. With so many men producing the reasons upon which they based their tenets—that in this place or in that place we must look for the prime cause of rheumatic diseases, and that in this way or in that way relief can be secured—it was evident that debates upon details would defeat the object of the movement. Any discussions with the intent to prove that one circumstance or one method was more important than another in ætiology or treatment would have resulted in no clearing up of admitted confusion. The meeting had not been convened to evaluate the factors causing rheumatic diseases or the methods designed to meet them, but to collect evidence upon which such evaluation could be made. A sifting of the vast information now obtained should lead to practical measures in certain public directions where the needs have been indicated clearly. Further, it should bring about a classification of rheumatic diseases which will assist in the determination of the appropriate treatment. To this last question the third Session of the Conference

plied itself, when surveys were given of the methods hich had been found useful in the prevention of ronic rheumatism, of the place that vaccines may cupy in the treatment of underlying infection of the sults of vaccine therapy, and the scope of surgery the treatment of arthritic deformities. There was substantial amount of contradiction in the evidence, d accordingly there were opposing recommendations r treatment. But these things should be regarded a wholesome outcome of the deliberations, for the riations of view will form the proper terms of ference for the intensive inquiries which must llow, and for the institution of which the medical ofession can rely upon the cordial support of the nistry of Health.

Annotations.

"Ne quid nimis."

REORGANISATION OF THE INDIAN MEDICAL SERVICES.

INDIA definitely requires European assistance, not ly for the care of the military and civil European pulation, but for the maintenance in the country of at spirit of modern medicine which has accomplished eady such mighty things, and which day by day is reading in influence and value. Whatever changes ay be inherent in the Indian reform scheme, the rvival of this principle was in the minds of those ho framed the Verney-Lovett report, and of the Lee mmission, and the Secretary of State for India has ated repeatedly that in any scheme for reorganisa- n of the Indian Medical Service it would be essential earmark for the portion of the service not mediately engaged on military duties a number of il positions, especially research or professorial pointments. It would clearly be a gain, not only to cruiting, but to Indian public health itself, for the edical officers of the Service to be employed in the partments of research and teaching in which their edecessors have done so much for the welfare of dia. We have now at last the final decision of the overnment of India in regard to these matters, d during the week a communiqué has been issued aling in detail with the reorganisation of the medical rvices in India. The scheme now sanctioned is sed on proposals framed in consultation with local vernments. The Indian Medical Service, con- ituted on the same broad lines as at present, will retained primarily to meet the needs of the Indian my, and in order to maintain two essential requisites namely, (1) the necessary minimum war reserve of edical officers, and (2) the provision for European edical attendance on officers and their families. ocal governments in India will be required to employ stated number of I.M.S. officers. It has been lculated that the war reserve to be employed by the il side should consist of 134 British and 66 Indian ficers, the larger proportion of British officers being ue to the fact that they cannot be recruited on nergency in India from the ranks of private practi- oners. Medical attendance on British personnel, d the requirements of civil administration, for hich the Central Government is still responsible, volve the provision of a number of employments rmed "residuary," the incumbents of which must e retained permanently in civil employment, so as to sure the continuance under any circumstances of a keleton staff to cope with civil requirements. he total number of officers required for civil nployment in the I.M.S. is now calculated at 302, lotted as follows: war reserve, 200; residuary sts in provinces, 46; foreign and political depart- ents, 17; gaols, 8; special posts under the Govern- ent of India, 14; port health officers at Bombay d Aden, 2; reserve of 5 per cent. as allowance for ness, 15. Of this total 212 will be European and 90 Indian. To provide employment for these 302 officers, 237 posts are required, 59 of which will be available under the Government of India, and 178 (of which 112 must be held by British officers) will be provided in the provinces. The estimate of the medical requirements of European medical attendance is based on data which will change from year to year as the proportion of European to Indian civil officers diminishes; it will therefore be subject to scrutiny and revision. The remaining 66 posts will be open either to Europeans or Indians, while 28 out of 59 appointments under the Government of India will similarly be open to officers of either race. Complete lists of the residuary posts are appended to the communiqué. The adoption of the new list of posts will leave on the civil side a surplus of I.M.S. officers now holding appointments, but care is to be taken for the full preservation of their existing rights. Their prospects will be allowed to diminish only pari passu with the absorption of the surplus which will remain until the number of officers now in civil employ is equal to the number of posts reserved for them in the new list. The detailed measures to safeguard these prospects are being worked out. The communiqué also sets out the rules which will come into force forthwith as an integral part of the reorganisation scheme, and which have been drawn up to safeguard the varied, if not conflicting interests, of the three parties: the Indian army, the provincial governments, and the medical officers themselves. The scheme as set forth makes it clear what are the prospects, immediate and remote, for British recruits to the medical services in India. We have not hesitated to express the belief that the period of depression is now passing, and that the prospect is again bright for those who are fitted in physique and disposition for a medical career in India. That belief is strengthened by a perusal of the communiqué.

THE DENTAL BOARD.

OPENING the fourteenth session of the Dental Board of the United Kingdom Sir Francis Dyke Acland remarked on the loss of Mr. L. G. Brock who resigned his membership on taking up his duties as chairman of the Board of Control. If the Dental Board's parents, he said, were the Privy Council Committee and the Ministry of Health, and Sir Almeric Fitzroy was chiefly responsible for bringing them together, Mr. Brock was the midwife, monthly nurse, and nursery governess during its early days. His greatest and most permanent contribution was to be seen in the relations of the Board with the dental schools. "The fact that his work has obtained their respect, whether we have laid upon them conditions by which they could earn our grants, or whether grants have had to be refused, is surely," said Sir Francis, "a tribute to his fairness and impartiality." Mr. Brock's successor, Mr. M. Heseltine, had had an equally wide experience, and held a high position in the Ministry of Health. Among the points that would be brought before the Board at this session was a motion for a reduction of the retention fee, payable annually by dentists whose names were on the register, from £4 to £3. Every pound of retention fee meant about £9500 in income. The present income with an original registration fee of £5 and a retention fee of £4 was something over £2000 in excess of expenditure, but the surplus arose mainly from interest on specific reserves, and, if these were expended upon the objects to which they were allocated, the surplus would only be something over £1000. The retention fee would now automatically revert to £5 unless new regulations were made. Sir Francis was inclined to favour the reduction of the registration fee from £5 to £2, and of the retention fee from £5 to £2, during the first four years after qualification, so as to afford relief to young dentists when they needed it most. This arrangement would entail a loss of £6000 on an entry of 400. Good work had been done in bringing the advantages of the dental profession before head-masters of schools, several thousand copies of a

memorandum on the subject having been distributed. Dental health propaganda continued to expand. The demand for lectures was increasing rapidly. Certain aspects of the subject of dental clinics were likely soon to be sub judice. The Board could be assured that members of the Discipline Committee were fully alive to the possibilities of the commercialisation of dentistry which might be involved and to the danger to the public interest which this might entail. Action must be directed solely by the duty to see that the law, and the code of conduct proper to dentists, are maintained.

TREATMENT OF URTICARIA WITH ALKALIS.

URTICARIA is generally placed in the group of allergic phenomena, being attributed to a specific supersensitiveness of the individual to some protein poison, arising within or without the body. Prof. T. Schreus,[1] of Dusseldorf, endeavours to find an explanation of some cases—at any rate, the more obscure and intractable ones—in a relative diminution of the alkaline reserve of blood and tissues. He was led to an investigation of this metabolic factor by discovering that large doses of bicarbonate of soda are sometimes helpful in treatment, and that some patients can be cured by the intravenous injection of the drug. In order to test the hypothesis he estimated the alkaline reserve in 81 persons, using Barcroft's apparatus, and controlling his results by van Slyke's method. Twenty-two were subject to urticaria and the results indicated that in this disease, and in Quincke's œdema, there is a sensible lowering of the alkaline reserve. A comparative table shows his results expressed in terms of carbon dioxide volumes per cent. The readings are highest in pruritus and eczema (60·7 and 60·9 respectively), whereas in urticaria they may be as low as 53·7 and 53. One of the cases in which urticaria was controlled by bicarbonate injections had an alkaline reserve of only 46 volumes of CO_2 per cent. Afenil (calcium-urea) injections proved of no avail, and when ammonium chloride was administered there was a violent outbreak of wheals. Prof. Schreus does not claim that the diminution of alkaline reserve is responsible for more than a certain proportion of cases of urticaria, and it would obviously be unreasonable to regard the problem of this disease as solved. But it may be worth while to determine the alkaline reserve in intractable cases, and where it is low, to treat the patient with sodium bicarbonate.

SOCIETY FOR RELIEF OF WIDOWS AND ORPHANS OF MEDICAL MEN.

AT the annual general meeting of this, the oldest medical provident institution, held on May 16th, the report for 1927 was presented. During the year four members were elected, three died and one resigned. The Society now consists of one hon. member, 161 life, and 141 ordinary members, making a total membership of 303. The invested funds amount to £139,400. The income from investments was £4207 10*s.* 6*d.*; income-tax was returned to the sum of £872; and £358 was received in subscriptions and donations. During the year a legacy of £100 was received. The working expenses were £375. One widow died during the year and two were elected on to the funds; one orphan was also elected. £4782 was distributed in grants among 51 widows and seven orphans. In January a set of silver salvers was presented to the secretary, Mr. E. J. Blackett, in appreciation of his successful conduct of the case against the Inland Revenue authorities last year. The directors believe that the membership of the Society would be larger if it were better known and increase its membership. The Society is both provident and benevolent. Should a member die and leave his widow with an income not above £125 per annum, she would, on the present scale, receive from the Society a yearly grant of between £75 and £90, and any children under the age of 16 would receive a yearly grant of £60 each. Over the age of 16 special grants may be made to orphans to enable them to continue their education or start in some profession. These grants in many cases amount to £52 10*s.* a year to each orphan. The directors wish to attract the attention not only of newly qualified and newly married members of the profession, but also of medical men whose dependants would never be in need of assistance from the funds. These latter, either by becoming annual subscribers or by giving a yearly donation, would be helping the widows and orphans of their less fortunate brethren. Membership is open to any registered medical practitioner who at the time of his election is resident within a 20-mile radius of Charing Cross. The subscription is small compared with the benefits that may be derived by unprovided dependants of a deceased member. The annual subscription for a member who at the time of his election is under 40 years of age is 2 guineas; if over 40 but under 50, 3 guineas; and if over 50, 4 guineas. There are special terms for life membership.

WATER: ITS POLLUTION AND ITS PURIFICATION.

IN his opening address on May 14th at a conference held this week under the auspices of the Society of Chemical Industry, the chairman, Lord Desborough, referred particularly to the efforts of the Thames Conservancy, of which he has been chairman for many years, to maintain a clean river. In view of possible future demands for additional water-supplies, he called attention to the general need for safeguarding the purity of the rivers of this country. Sir Alexander Houston developed the subject in an address on "Water Purification." The daily consumption of water in the area of the Metropolitan Water Board is, he said, 260 million gallons, of which about 60 per cent. is drawn directly from the river Thames. Deep wells yield 34 million gallons, and this is the only portion of the supply which does not need purification. The Thames supply is treated by double filtration and is then chlorinated. Moreover, storage itself acts as a very effective system of purification. Raw water containing 1000 colon bacilli per 100 c.cm. finally yields water showing their absence in 100 c.cm. The steady decrease in the incidence of enteric fever in London in recent years was a tribute to the work of the Board. The excess lime method of treatment had given very promising results especially in waters which needed softening as well as purification. Mr. J. H. Coste, F.I.C., spoke of the pollution of tidal and non-tidal streams. He pointed out that until recent years pollution of our rivers and streams was caused mainly by domestic sewage and refuse, but the modern growth of industrialism had added new sources of contamination. Among these were refuse from beet-sugar works, from wool-washing, and from tanneries, distilleries, and milk products works, also tar-washings from roads. Organic pollution of a stream produced slight opalescence of the water, and the growth of green and blue-green algæ and, when pollution was more pronounced, the growth of grey woolly sewage fungus. The mud became black and fermentation occurred with the evolution of gas, which, rising in bubbles to the surface, might carry with it masses of peaty matter and the river might smell. The general effect of all pollution was to degrade or destroy normal life in the affected stream. A river received more or less organic matter as well as salts in the form of soil washings, and these supplied sufficient nitrogen, phosphorus, and silicon to enable diatoms and algæ to thrive, and to attract a population of protozoa and small crustacea which, with insect larvæ, seemed to form the food of most fish. A balance of population of all kinds was reached, the plants utilising the carbon of carbon dioxide and bicarbonates, and giving up the oxygen required by the animals. Mr. Coste

[1] Münch. Med. Woch., 1928, lxxv., 340.

ferred briefly to the work of Butcher and Pentelow the river Lark in the Bury St. Edmunds district. lf-purification of a stream was effected by the idation of the organic matter causing the pollution, d at the temperature of natural waters this could ly be brought about by the agency of micro-ganisms. Apart from that liberated by photo-nthesis, the only source of oxygen available was e air, so that the rate at which water could absorb ygen from the air was a governing factor in deter-ning the effect of any pollution. This rate was mparatively slow, but at ordinary atmospheric mperature water saturated with oxygen contained volume about 7 parts per 1000. The rate of aeration of a partially deoxygenated water was portional to its lack of saturation due to the idising of the polluting organic matter. Thus a mplete absence of dissolved oxygen showed that trefaction might follow immediately; 70 per cent. uration showed that oxygen is being used up at per cent. of the possible rate, and so on. In a n-tidal stream the degree of pollution could thus be termined simply by examining the water above and low the point of pollution, but in a tidal river the oblem was not so straightforward, since the tide uld carry the polluting matter periodically up and wn, producing a zone of pollution both above and low the outfall. Mr. Coste called attention to the rk of the Ministry of Agriculture and Fisheries, ich, in conjunction with the Standing Committee on ver Pollution, is accumulating much information as the condition of many rivers in this country, gely from the point of view of the fisheries. The ief causes of unfitness of water for fish-life are: deficiency of oxygen, (*b*) presence of poisons, absence of necessary salts, (*d*) unsuitable tempera-re. The oxygen requirements of trout have been idied by Gardner and Leetham. At 4·7° C. they quire 102 c.cm. per kg. per hour and at 16° C. proximately twice as much. Many other varieties fish have been investigated in this connexion, and a general guide it may be taken that dissolved ygen in the water of a salmon or trout stream should t be below 70 per cent., or below 50 per cent. for ner fish. The 1868 Royal Commission on River llution resulted in the Rivers Pollution Act of 76, which, in its several clauses, prohibited the dition to streams of solid or liquid polluting matter, less the best practicable and available means were ed to render it harmless. "Streams" were defined, der certain circumstances, to include the sea and al waters. In 1923 the Salmon and Freshwater sheries Act gave Fishery Boards powers to control e discharge of trade effluents from new sources. As lessening existing pollution Mr. Coste expressed the inion that there should be no difficulty in produc-g a harmless effluent from ordinary sewage, most of e trouble in this respect arising from inadequate or solete works, or lack of skilled supervision. The atment of industrial trade effluents is as a rule more ficult, and each must be separately considered and alt with in a manner appropriate to its own special cumstances.

THE CERTIFICATION OF LUNACY: LAYMEN KNOW BETTER.

Two inquests held on May 12th gave occasion for mment on the fact that certification under the nacy Act is far from final. Both were cases where seemed not unreasonable to say that death resulted om the ignoring of expert medical opinion. One s an inquest at Hackney upon the death of a man who threw herself from a window in the ackney Infirmary. She had been under treatment the German Hospital, where the resident medical icer had certified that she should be placed under per control. She had been discharged from there the care of her husband on the authority of the ieving officer who, after a visit to the hospital, d decided that it was not a case he could deal with der the Lunacy Act. Presumably the relevant actments are Sections 13 and 20 of the Act of 1890; but at any rate the machinery which the law provides for preventing a certified lunatic from being at large and not under proper control and treatment broke down through no fault of the medical profession. The coroner, Dr. Edwin Smith, observed that by Act of Parliament doctors are given discretionary powers to say when an individual requires to be placed under proper control. "In my opinion they ought to be sufficient to satisfy relieving officers; it is unfortunate that in this case medical opinion was overridden but the relieving officer acted in accordance with his legal rights; if anyone is to be blamed, it is the framers of the Act, who could have closed the door to any possible overriding of a medical man's opinion by a layman not skilled in diagnosing medical diseases." The other inquest was at Eridge near Tunbridge Wells. A magistrate had refused to sign an order for a woman's removal to a mental hospital. Dr. Basil Pain, of Southborough, made a vigorous protest against the overriding of medical opinion, and Mr. Hillman the coroner, said there was no doubt that, if the magistrate had signed the order, the woman would be alive to-day. When medical practitioners are sued for damages for negligence in certifying that a plaintiff was insane, it has always been argued on their behalf that it is not the doctor's certificate but the magistrate's order which causes the lunatic to be placed under control. The case at Eridge strongly reinforces that argument. It is ridiculous to hold the doctor responsible if, as in these two cases, his opinion can be overridden.

A SURGEON'S SIXTIETH BIRTHDAY.

Prof. de Quervain's colleagues and pupils have taken the opportunity of his sixtieth birthday to issue a Festschrift or Jubilee book in honour of one who has served medicine, both national and international, no less than he has served the patients who have come under his care. Fritz de Quervain was born at Sitten on May 4th, 1868. After qualifying in 1894 he settled as surgical specialist in La Chaux-de Fonds, where he was surgical director of the local hospital until he was recalled to his old school at Berne as privat-docent. In 1910 he succeeded Wilms as professor of surgery in the University of Basle, and eight years later returned once more to Berne to succeed Kocher in the chair of surgery there. Over 200 scientific papers have left his pen, the larger proportion of them dealing with goitre, and then in descending order with tumours, tuberculosis, and surgical technique. His book on Surgical Diagnosis, which first appeared in German in 1907, has been translated into most of the languages of Europe and circulates freely among students and practitioners. Far from retiring into well-earned leisure, now he is a sexagenarian, Prof. de Quervain's colleagues congratulate him on retaining the zest and delight in work which has always been his characteristic. The Festschrift is to be published shortly, while the individual papers which it contains will appear in successive issues of the *Schweizerische Medizinische Wochenschrift*.

LYMPHADENOMA WITH RELAPSING PYREXIA.

AMONGST the cases described in 1832 by Thomas Hodgkin in his classical paper "Some Morbid Occurrences of the Glands and Spleen" we find one in which two attacks of intermittent fever occurred. In 1885 Osler called special attention to attacks of recurrent fever in Hodgkin's disease and pointed out that the glands increased in size during the fever and diminished again in the apyrexial intervals. But credit for the discovery of this phenomenon was subsequently given to P. K. Pel, who in the same year wrote of periodic rises of temperature in "a form of pseudo-leukæmia." His fame is shared by W. Ebstein, who in 1887 described "das chronische Rückfallsfieber, eine neue Infektionskrankheit." In a monograph [1]

[1] MacNalty, A. S.: An Investigation of Lymphadenoma with Relapsing Pyrexia. Ministry of Health Reports on Public Health and Medical Subjects. No. 50. 1928. 1s. 6d.

just published by the Ministry of Health, Dr. A. S. MacNalty supplies an extensive review of the literature of this condition and describes in detail 17 cases which have come under his personal observation. He finds that the cases fall into three clinical groups. In the first and most common type the external glands are enlarged, but not to a very great extent. During the pyrexial periods they may be painful, soft, and tender, but they do not become attached to the skin. The glands may remain of the same size during both febrile and afebrile periods, but occasionally some degree of enlargement is observed in the pyrexial periods with compensating diminution in the apyrexial periods. The second type is rare, but possesses distinct clinical features. In the apyrexial stage the glands may be small, freely movable and unattached to one another or to the skin. With the onset of pyrexia the clinical picture changes with marvellous rapidity. The glands swell up and a single gland may attain the size of a cricket ball; they are hot, painful, and tender to the touch, are apparently adherent to the skin, and the skin over them is red or purple and sometimes œdematous. They closely resemble suppurative glands on the point of discharging pus. But as lysis occurs the glands shrink down to their original size, and the pain, tenderness, and heat subside completely until the process is repeated in the next pyrexial period. The third type, also rare, is that in which the internal glands alone are involved. Relapsing pyrexia and progressive weakness from no discoverable cause are its salient features. Occasionally palpation of the abdomen or radioscopy of the chest may reveal the presence of enlarged internal lymphatic glands. The prognosis is bad in all three groups.

Cases of this disease often escape recognition owing to confusion with other maladies; of these tuberculous adenitis and chronic pulmonary tuberculosis present great difficulties in the differential diagnosis. When superficial lymphatic glands are enlarged and careful search fails to reveal any other tuberculous manifestation, one of the glands should be excised and submitted to microscopic investigation. This course should be pursued as a routine method, for, in the absence of other signs of tuberculosis, no other means of diagnosis is at present available. A mere pious opinion, unconfirmed by histology, that enlarged glands in the neck are due to Hodgkin's disease, may lead to prolonged radiotherapy and even to gross disfigurement before the condition is discovered to be tuberculous. Dr. MacNalty discusses at length the macroscopic and microscopic researches of D. M. Reed, F. W. Andrewes, W. T. Longcope, and H. M. Turnbull. We are grateful to him for his emphasis on certain points in the morbid anatomy—for example, the frequent occurrence of "Hodgkin nodules" in bone. But we regret that the Ministry of Health should have neglected this opportunity to give a lead in nomenclature and to allocate to this disease the title "Lymphogranuloma," which, on the showing of the pathologists quoted, it so clearly deserves.

THE IRISH FREE STATE REGISTER.

THE Register of medical practitioners in the Irish Free State is to be established on May 26th, after which date no one whose name is not inscribed therein will have the status of a medical practitioner in the territory of the Irish Free State. In the first instance the Register will include the names of all those whose names are on the General Register with an address in the Irish Free State, together with the names of any other practitioners registered in the General Register who may desire to be registered in the Irish Free State Register. All such names will be registered without fee up to May 26th. The names of those resident in the Irish Free State will be put on the list automatically, but all others must make application to the Registrar. After May 26th names will be registered only on the payment of a fee. It is important, therefore, for those who, not being at present resident in the Irish Free State, may contemplate ever engaging in practice there, to make application for registratio at once. In particular practitioners residing i Northern Ireland whose practice frequently or occa sionally carries them across the Border, should tak the necessary steps to secure their professional statu in the Irish Free State. The address of the Registra is Room 123, Custom House, Dublin.

WE have pleasure in announcing that the Govern ment duty on radium, which we deplored last wee in view of the rapidly increasing therapeutic import ance of the substance, is to be suspended. Th Treasury have made an order under Section 10 (5) o the Finance Act, exempting radium compounds fro key industry duty from May 15th to Dec. 31st, 192 and we have every reason to believe that the dut will not be re-imposed.

THE Royal Faculty of Physicians and Surgeons o Glasgow have appointed Mr. George Henry Edingto to be their representative on the General Medica Council.

A MEMORIAL tablet to Sir William Leishman wi be unveiled in the Chapel of the Queen Alexandr Military Hospital at 11.30 A.M. on Saturday, June 2nd

The Services.

INDIAN MEDICAL SERVICE.

THE NEW RULES.

IN a communiqué just issued by the Governmen of India, dealing with the reorganisation of th Medical Services in India (summarised on p. 1025 o our present issue), are set out the rules which hav been framed in the interests of the Army, the Loca Governments, and of officers themselves, as a integral portion of the scheme. These rules wi come into force forthwith.

1. Liability to serve on either civil or militar side will be a definite condition of service for a future entrants to the Indian Medical Service.

2. No officer will be transferred to civil employmen without the consent of the Government of India an Local Government.

3. An officer transferred to civil employmen will not ordinarily be liable to be recalled to militar employment (except on general or partial mobilisatio without the consent of the Local Government, bu the Government of India will retain the power t recall an officer against the wishes of a Local Gover ment in very exceptional cases of absolute necessit

4. A Local Government will not be at liberty without the consent of Government of India, t return to military employment an officer transferre to civil employment.

5. All officers in civil employment (including tho now in the Service) about a year before the date o which they are expected to be due for promotion t the rank of colonel, will be required to state wheth they wish to return to military employment, in ord that they may be considered for promotion t administrative rank.

6. Those officers who elect to return to militar employment will be recalled and employed in position suitable to their rank without, howeve any guarantee of eventual promotion.

7. The case of each officer will then be considere on its merits when his name comes up for promotio and (*a*) those considered suitable for military pr motion will be retained on the military side un promoted to administrative rank, after which th would not normally revert to civil employmen while (*b*) those not considered suitable for promotio will normally revert to civil employment or, subje to approval of military authorities, be given th option of remaining in military employment in th rank of lieut.-colonel until retirement.

. Those officers who do not elect to return to itary employment will either (*a*) sever their nexion with the Indian Medical Service and ome members of the Provincial Medical Service such terms as may be mutually agreed upon ween themselves and the Local Government, vhich case they will cease to belong to the War erve, or (*b*) will continue to belong to the Indian lical Service, in which case they will be eligible further promotion on the civil side, and will tinue to belong to the War Reserve provided that y do not hold residuary appointments. Also y will be eligible to receive promotion in military k, as at present, on the basis of the civil adminis- ive posts which they hold.

. An officer who desires permanent civil employ- nt, but does not succeed in obtaining it, will be ranteed employment in the Military Medical vices unless he is unfit for active service, or there ome other equally valid impediment to his being ployed on military duties.

NAVAL MEDICAL COMPASSIONATE FUND.

the quarterly meeting of the directors of the Naval ical Compassionate Fund, held on April 26th, the sum 175 was distributed among the several applicants.

ROYAL NAVAL MEDICAL SERVICE.

rg. Comdr. F. C. Robinson is placed on the Retd. List the rank of Surg. Capt.

ROYAL NAVAL VOLUNTEER RESERVE.

rg. Sub-Lieut. H. S. Waters to be Surg. Lt.

ROYAL ARMY MEDICAL CORPS.

aj. A. T. Frost to be Lt.-Col., vice Lt.-Col. D. O. Hyde d.).

pt. (Prov. Maj.) C. H. G. Penny retires, receiving a uity and is granted the rank of Maj.

. J. D. Borham is placed on the half-pay list on account l-health.

. (on prob.) P. V. MacGarry from the secd. list is restd. ie estabt.

mp. Lt. A. F. Downie relinquishes his commn. on unt of ill-health.

. on prob. J. M. Quinlan resigns his commn.

ARMY DENTAL CORPS.

pt. A. E. Webb to be Maj.

TERRITORIAL ARMY.

pt. A. Mead, late R.E., to be Lt., and relinquishes the of Capt.

pt. W. K. Churchouse resigns his commn.

pernumerary for service with the O.T.C.: W. A. key supern. for serv. with the Med. Unit, Glasgow Univ. gt., Sen. Div., O.T.C.

TERRITORIAL ARMY RESERVE OF OFFICERS.

aj. G. B. Gill, from the Active List, to be Maj.

ROYAL AIR FORCE.

E. Alderson is granted a short service commission as ying Officer for three years on the Active List and is nded for duty with the Victoria Infirmary, Newcastle- n-Tyne.

ying Officer P. O'Callaghan resigns his short service mission.

ight Lt. T. Sheehan relinquishes his temporary com- ion on completion of service and is permitted to retain ank.

AUXILIARY AIR FORCE.

ie undermentioned Flying Officer (Honorary Flight Lt.) e Flight Lt.: No. 600 City of London (Bombing) dron: N. P. Henderson.

TERRITORIAL DECORATION.

ie King has conferred the Territorial Decoration upon . Col. Attwood Thorne, V.D., Majs. Norman Mello usson, John Francis Edmiston, Thomas William Selwyn s, James Alexander Stenhouse, and Frank Harris White.

COLONIAL MEDICAL SERVICES.

ie following appointments have been made by the etary of State for the Colonies: Dr. V. F. Anderson, st. M.O., British Honduras; Dr. N. V. McKenna, ., Federated Malay States; Dr. A. F. Brown, M.O., nda; Dr. D. E. Wilson, M.O., Tanganyika Territory; A. V. Clemmey, M.O., Tanganyika Territory; Lieut. F. G. Dickson, Sanit. O., Kenya; and Dr. E. J. kaby, Dist. M.O., Cyprus.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXVI.

THE TREATMENT OF ANEURYSM.

THE history of aneurysm and its treatment is a long one. The experience gained from the study of this disease, from the observations of Morgagni in the eighteenth century to those made during and after the Great War, enables us to-day, by the correlation of sound clinical observations and accurate pathological investigations, to undertake the treatment of this condition in a rational way. But all measures are unsatisfactory when the disease is once established and palliation of symptoms must then be the aim.

Aortic Aneurysm.

Preventive Measures.—The very close relationship between aneurysm of the aorta and syphilis—for only in rare instances is it due to other causes—is an indication of the need to begin antisyphilitic therapeutic measures early, before the development of symptoms and physical signs which characterise the disease have become manifest. The routine radiographic examination of the chest in patients suspected of cardiovascular syphilis makes this possible. If this method of examination were widely applied, and followed by suitable treatment with mercury, iodide, and arsenic the development of aortic aneurysm in many patients would be prevented. Mercury should be administered either by inunctions, injections, or by the mouth up to the point of saturation, and continued with free intervals of two or three months in the year, if the Wassermann reaction remains positive, for five years or longer. The Wassermann reaction is not likely to become negative in more than a quarter of the cases treated. A negative test is an indication to withhold mercurial treatment for periods up to six months in the year. Potassium iodide, grs. 30 daily, is an equally essential therapeutic measure. Larger doses are not easily tolerated, for this drug must be given over as long a period as the mercury with the same free intervals. Each year for five years there should be given a series of six to eight intravenous injections of N.A.B., 0·6 g. at weekly intervals. An initial dose of 0·3 g. as a safety measure is to be recommended. These injections may be given in the out-patient department or in a consulting-room, and no special precautions regarding diet and rest are necessary. Accidents are not likely to follow the administration of this drug given in this way, and no symptoms of consequence should result from such treatment.

It is difficult, apart from specific treatment, to lay down any definite rules useful in the prevention of aneurysmal dilatation in a patient with specific aortic disease. Such instructions as are usually given to patients with chronic valvular disease due to other causes are helpful in arresting the progressive changes caused by intercurrent infections, focal sepsis, unsuitable work, and an unhealthy mode of living. An acute infection is an indication for rest in bed which should be continued for at least a week after the fall of the temperature to normal, the greater the constitutional reaction the longer should be this period of rest. Focal sepsis should always be treated with a view to removing a source of toxic absorption. It is important in choosing an occupation to select one that allows the patient to live within the limits of his cardiac reserve. It should not be arduous, nor expose the worker to cold, dampness, and heavy winds. Well-lighted and properly ventilated rooms, a climate without extremes of temperature, and an altitude not higher than 1000 ft. above sea-level, are points to be considered. If the patient has an anxious state of mind the judicious use of sedatives is called for; of

these bromides are of the greatest value in the treatment of nervous symptoms. They may be prescribed alone, or added to the iodide mixture, and in combination with nux vomica when exhaustion is noticeable in spite of the fact that the patient is physically at rest or has undergone only slight exertion.

Pain due to Structural Damage.—If it has not been possible to prevent structural damage of the aortic wall symptoms will appear. Pain of an anginal character may be the outstanding clinical feature of the disease at this time. It is usually associated with coronary and myocardial changes. The treatment is that of angina pectoris of specific origin. Inhalations of amyl nitrite are indicated when the pain is paroxysmal and occurs at rest. Sodium nitrite, grs. 2, two or three times daily, may prevent the onset of pain caused by slight exertion. Potassium iodide, grs. 30 daily, or in larger doses for a short time, is a remedial agent which sometimes proves satisfactory in treatment of this symptom. Mercury is of less value, but should be given a trial. In many instances physical rest alone brings relief, and a month in bed with a simple diet is a wise recommendation, particularly when there are peripheral vascular changes and a raised blood pressure. If arsenic is given it is advisable to keep the patient in bed throughout the whole period of the injections. Many patients show no improvement; a few have less pain, but in others the symptom may be aggravated. There is thus a certain risk attached to this form of treatment, and the results are, on the whole, unsatisfactory.

A long period of many months with complete physical rest, a depletion diet, and a low fluid intake is sometimes advised. This is not justifiable if undertaken as a curative measure, but if all other methods of treatment for the relief of symptoms have failed, such a régime, if it can be endured, may be tried.

It sometimes happens that the gradual increase in size of the tumour is arrested by the formation of an organised thrombus, which, spread over the inner surface of the aortic wall, may fill a large part of the tumour cavity. Acupuncture, electrolysis, the insertion of long coils of wire and other foreign bodies, are methods of treatment which have been employed with the object of stimulating artificially the coagulation of the blood—a natural healing process. Unsatisfactory results have led to the abandonment of these surgical measures.

Pressure Symptoms.—In the natural course of the disease the symptoms which dominate the clinical picture and are an urgent indication for treatment, are those caused by the pressure of the aorta on neighbouring structures in the chest cavity. The irritating paroxysmal cough, due to pressure on a bronchus, accompanied by breathlessness in all grades of severity, is a distressing symptom. Alterations of posture or rest may be tried, but often the discomfort is relieved only by the administration of opium in some form. A morphine or codein linctus and a sedative inhalant may help, especially when there is laryngeal palsy from paralysis of the recurrent laryngeal. A useful prescription is:—

℞	Codeinæ phosphatis	gr. ½
	Glycerini	℥ xv.
	Spt. chloroformi	℥ ii.
	Aquam	ad ʒ i.

Expectorants are useful when bronchiectasis is present and should be combined with some antiseptic if there is much toxic absorption. When there is pressure on the œsophagus food must be given in small quantities and in liquid form if it is to be easily swallowed. The choice of food which is not bulky and is sufficiently nourishing can in most instances be left to the patient, who will be guided by his own experience and tastes. The boring, agonising pain from pressure on the vertebræ, the spinal cord, the brachio-cephalic and other spinal nerve routes, is an indication for sufficient morphia to give the patient a few hours sleep. Sometimes relief can be obtained from rest in certain positions. One may be comfortable in a sitting posture, another only when lying flat on his back or side.

When the pain is less severe aspirin, phenacetin and medinal in combination may have some effect and give the patient longer hours of sleep than he would otherwise have.

Slight bleeding from the aneurysmal wall should be treated by long and continuous rest; this should lessen the hæmorrhage, which may even cease for a time.

Aneurysm of the abdominal aorta, when below the level of the renal vessels, may give rise to pain with an iliosacral distribution. Proximal ligature for a few hours has led to a diminution in the size of the tumour and a relief of pain for a month or longer; fatal results of such ligature are frequent. Some successes have been reported, with fewer fatalities, from digital compression. Such surgical intervention is worth a trial when aspirin and morphia fail to relieve the pain.

Aneurysms in Peripheral Vessels.

When a peripheral vessel is the seat of an aneurysm of specific origin, surgical treatment may be recommended with the hope of obtaining a good result. The technique is intricate, particularly when a subclavian or iliac vessel is involved; the operation takes a long time, and careful aseptic precautions are necessary to avoid gangrene or some other serious disturbance of the peripheral circulation. Proximal ligation of the vessel, or ligation of the proximal and distal ends of the aneurysmal sac are operations devised to obliterate the sac and not interrupt the peripheral circulation in this region. Such operations are possible in an area where there are other vessels which can carry on the circulation interrupted by the occlusion of the aneurysmal sac. In other regions ligation is not feasible because of the anatomical distribution of the vessels; here complete excision of the sac and the union of the proximal and distal ends of the vessel by suture has been attempted with success in a large number of reported cases. Only those with a knowledge of the special technique required should attempt this operation. When the seat of the aneurysm is a small vessel it is sometimes possible by external pressure for many hours to obliterate permanently the aneurysmal sac.

These are operative measures valuable in the treatment of aneurysm of peripheral vessels of specific congenital or traumatic origin. Such treatment is not indicated in mycotic aneurysms of these vessels when part of a general infective process, as in malignant endocarditis. The disease is anyhow likely to be a fatal one, and the aneurysm is an accident unlikely to affect its general course.

Arterio-venous Aneurysms.

Arterio-venous aneurysms, the result of gunshot wounds, were frequently observed during the war when many of them were treated surgically with success. In civil life they are generally of traumatic origin. Some are congenital. When possible, the sac should be excised. Proximal ligation of the sac is a simpler operation, but gives less satisfactory results owing to the danger of embolism. This is an especially important consideration when the vessels of the neck are involved. The obliteration of the sac by ligation of the proximal and distal ends avoids the danger, and the possibilities of gangrene from the unsuccessful excision operation. It should be remembered that an arterio-venous aneurysm leads to enlargement of the heart and probably myocardial disease from malnutrition of the heart muscle. There is some evidence to support the view that the relationship between an arterio-venous aneurysm and cardiac disease is a close one, resembling in many ways the reaction of the heart muscle to a defective aortic valve.

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THE HARVEY CELEBRATION:

ORGANISED BY THE ROYAL COLLEGE OF PHYSICIANS OF LONDON.

A CELEBRATION of the tercentenary of the publication of "De Motu Cordis" was organised by the Royal College of Physicians of London to take place between May 14th and 18th. The programme of arrangements issued by the College commenced with the following summary of Harvey's life, and of the circumstances of the great discovery, while the connexion of the founder of physiology with the College was set out alongside full notes of the history of the College.

WILLIAM HARVEY.

William Harvey was born at Folkestone in 1578 d educated at the King's school of Canterbury and terwards at Caius College, Cambridge. After aduating in Arts at Cambridge in 1597 he set out r Padua, where he studied medicine for four years ıder Fabricius, Minadous, and Casserius, and in 02 received from that University the diploma of octor of Medicine, which is now in the possession this College. On his return from Padua Cambridge mitted him to her doctorate, and in 1607 he became Fellow of the Royal College of Physicians, and in 15 its Lumleian Lecturer. Meantime, in 1608, he d received a reversionary appointment as Physician St. Bartholomew's Hospital, which became solute in 1609. As Lumleian Lecturer Harvey pounded year after year within the College his ctrine of the circular movement of the blood, fore he gave it in its completed form to the world large, in 1628, by the publication at Frankfort of s "Exercitatio Anatomica de Motu Cordis et nguinis," dedicated to King Charles I., a copy of e first edition of which may be seen in the Library the College. (Fig. 1.)

In this volume, addressing the President of the oyal College of Physicians and his other fellow ysicians, he says:—

"I have already and repeatedly presented you, my learned ends, with my views of the motion and function of the art in my anatomical lectures: but having now for nine years d more confirmed these views by multiplied demonstrations your presence, illustrated them by arguments, and freed em from the objections of the most learned and skilful natomists, I at length yield to the requests, I may say treaties, of many, and here present them for general nsideration in this treatise."

The manuscript notes of the course given in 1616 ay be seen in the British Museum, or in excellent scimile reproduction in a volume prepared under ie supervision of a Committee of the Royal College Physicians.

During the Civil War Harvey was often in close ttendance as physician on King Charles I., both n the field of battle and at the Royal Headquarters t Oxford, where he became Doctor of Medicine in 642, and Warden of Merton College in 1645 for a ngle year. In 1648 he retired from active practice, nd spent the evening of his days at the house of one r other of his merchant brothers, more particularly t the Roehampton house of Eliab, who was a member f the Grocers' Company. Here he resumed his rmer work on the Generation of Animals, which as published in 1651 through the instrumentality f Sir George Ent. In this same year Harvey offered o build a Museum for the College, which was to be t once a library and a repository for simples and arities. In 1654 the completed building was handed ver, together with the title-deeds, to the College. n the same year the Fellows elected Harvey, who ad already been Censor in 1613, 1625, and 1629, nd Treasurer in 1628 and 1629, their President, but ge and failing health constrained him to decline the ffice. Nevertheless he continued to discharge his uties as Lumleian Lecturer until 1656, when on aying down this post he crowned his unceasing enerosity to the College with the gift of his partimonial estate at Burmarsh, in Kent. In his Deed of Gift he provided money for the stipend of the Librarian and the upkeep of the Library, and for an annual Banquet and Oration. He enjoined the chosen Orator to commemorate the benefactors of the College, stating what they have done for the College and calling on others to follow their example, and to exhort the Fellows and Members of the College to search and study out the secrets of nature by way of experiment, and to continue in mutual love and affection among themselves for the preservation of the dignity of the College. The Banquet and the Oration are held in the College annually on St. Luke's Day, Oct. 18th.

In 1657 this passionate searcher after truth, this generous, unworldly, religious man died, where he had chosen to live, in the house of one of his beloved brothers, that of Eliab, at Roehampton.

The prompt and universal acceptance of Harvey's discovery as an indisputable anatomical fact was hindered by the circumstance that he left one detail in the circular movement of the blood for future demonstration—namely, the precise mode of transference of the blood from arteries to veins. Malpighi made this known to the world in 1661, having seen by the aid of the microscope the passage of the blood through the capillaries of a frog's lung. He even caught a glimpse of the blood corpuscles in actual transit, but it remained for Kircher, Swammerdam, and Leeuwenhoeck to give them bodily form. As Malpighi was born in 1628, a tithe of homage in this Tercentenary Celebration may well be bestowed on him.

Surprise is sometimes expressed that the physiological harvest of Harvey's discovery was delayed so long in its ingathering. Harvey was well aware that this discovery touched only the fringe of the much wider problem of the purpose of the circulation. For this reason he styled his "De Motu Cordis" an Anatomical Exercise, and promised further treatises on Nutrition and Respiration, neither of which was destined to be born of his hand.

Before Harvey, the prevalent belief had been that the food became converted in the intestines into chyme, which was carried by the portal vein to the liver, and there converted into blood and endowed with "Natural Spirit," or the property of growth. Part of this low-grade blood was carried from the liver by the hepatic veins and the inferior vena cava to the right ventricle, where it gave off impurities by way of the pulmonary artery and the lungs, and after this purification ebbed to and fro for purposes of ordinary nutrition. A very small part of this venous blood did, however, pass through invisible pores in the muscular septum to the left ventricle, where it was mixed with air drawn in from the lung by way of the pulmonary vein, by the agency of active traction of ventricular diastole. Thus was produced a high-grade arterial blood, instinct with the principle of life, the "Vital Spirit," which ebbing to and fro in the arteries endowed the various organs with function. From such as reached the brain was distilled the noblest essence of all, the "Animal Spirit" or breath of the soul, which when carried out from the brain by the nerves initiated motion and sensation and the highest functions of the organism.

Harvey's demonstration that the same blood flowed perpetually in two interlacing circuits, from right to left and from left of the heart, visiting in its course the remotest portions of the body, swept away at one stroke the very foundations of all this fantastic speculation, and paved the way for a scientific explanation of the purpose of the circulation. So it is that the publication of the "De Motu Cordis" has been rightly acclaimed as The birthday of Physiology.

Historical Notes on the Royal College of Physicians of London.

The following notes recapitulating the mainstay of the Royal College of Physicians have also been extracted from the very informing programme:—

The Royal College of Physicians was founded by Thomas Linacre who, with the assistance of Cardinal Wolsey, obtained from King Henry the Eighth a Royal Charter, dated September 23rd, 1518, which granted the power to form a College for the purpose of controlling and protecting all those who were engaged in the practice of medicine in the City of London and for seven miles around. By a subsequent Statute, 14 Henry VIII, the powers of the College were extended so that authority was exercised over all who practised medicine throughout England, with the exception of those who were doctors of medicine of Oxford and Cambridge. Six physicians—viz., John Chambre, Thomas Linacre, Ferdinand de Victoria, John Francis, Nicholas Halsewell, and Robert Yaxley were named in the Royal Charter as the first Fellows of the College, and power was granted to them to elect a President, to add to their number, to make by-laws and regulations, and to license all those who wished to practise medicine in the City o London and seven miles around.

Thomas Linacre, the founder, was chosen the firs President of the College which owed its inceptio almost entirely to his forethought and energy Linacre had travelled in Italy, and had studied a several Universities in that country, especially a Padua. While in Italy he had been impressed wit the care and attention bestowed upon the study o medicine, and he, no doubt, compared this activit with the lack of enthusiasm in England. As a resu of these impressions he decided to found in England College designed to control, foster, and promote th study of medicine. When he founded the Colleg Linacre had in mind as a model the medical schools Italy, and so it comes about that the constitutio and composition of the College show some resemblan to those of the Italian Universities of Linacre's da The College was founded by Linacre, but its struggl for existence might have ended in failure but for th devotion and energy of Dr. John Caius who w President for ten years during the years 1555–157 Under his firm and sagacious rule the College gre and became firmly established. The debt it owes Caius can hardly be measured.

The College Houses.—The first meetings of th College, for the transaction of business, were held Linacre's house in Knightrider-street, in the Cit and here it remained until 1614, when a new hou was erected at Amen Corner, with a garden, on t site of the present house of the Canons Residentia of St. Paul's. This College House, which was occupation in Harvey's time, was burned down the Great Fire in 1666, and in 1674 the Colle removed to a new building in Warwick-lane in t

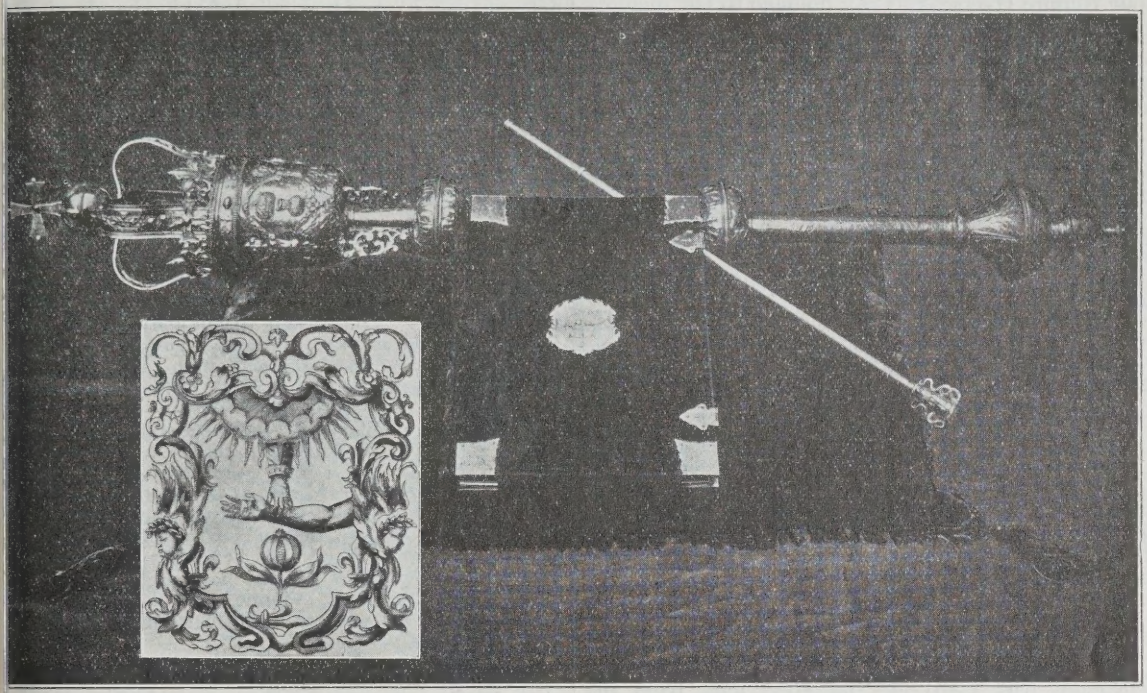
Fig. 1.

Harvey demonstrating to King Charles I. the rôle of the heart in maintaining the circulation of the blood. From the picture by Robert Hannah, 1848, in the possession of the Royal College of Physicians of London.

ity, which had been built from the designs of Sir hristopher Wren. Here it remained until 1825, hen it removed to the present building which was signed by Sir Robert Smirke, and erected on a

Silver.—The College collection of Silver Plate, with a few notable exceptions, dates from the beginning of the eighteenth century, and has been formed by gifts from the Fellows from time to time.

FIG. 2.



The Insignia of the College. The inset represents the Arms of the College as depicted in *London's Armoury*, by Richard Wallis.

e belonging to the Crown, but leased to the College r 999 years.

The Library.—The medical books of Linacre, equeathed by him to the College, formed the nucleus the Library, and by gifts and bequests it increased ntil in 1660, the date of the first Catalogue, it umbered some 1300 volumes. In 1666 the Library as destroyed in the Great Fire, and only 140 volumes ere saved. After this disaster the Marquess of orchester, a Fellow of the College, and possessed of ne of the finest private Libraries in England at that me, bequeathed the whole of his books, amounting some 4000 volumes, to the College. To this equest the great value of the Library is largely due. ther valuable bequests were made from time to me, and in 1921 the late Dr. Lloyd Roberts equeathed the whole of his Library of early printed edical books to the College, a bequest second only that of the Marquess of Dorchester. The Library w contains about 50,000 volumes, of which more than 0 were printed before the year 1500, and over 00 before the year 1600. The Library is not nfined to medical books alone, for it contains ctions comprising early editions of the Classics, neology, Civil and Canon Law, Mathematics, and e Natural Sciences. It also contains about 350 anuscripts, some of them of great interest, a fine llection of some 5000 engraved portraits of medical nd scientific men, and a large series of Charters nd other legal documents relating to the history of e College.

Portraits.—The College possesses 130 portraits in l of distinguished Fellows of the College, and the llection is representative of many of the portrait inters in England during the last three centuries. esides these the College contains many busts and me miniatures and medallions.

The Insignia and Arms of the College.

The Insignia of the College (Fig. 2), which are figured in the programme, consist of the Mace in silver-gilt, presented in 1683 by Dr. John Lawson, a former President of the College, the Caduceus, a silver wand carried by the President on official occasions, and made for Dr. Caius in 1556, the Book of the Statutes, and the velvet Cushion on which the Book rests.

THE RECEPTION BY THE KING.

The celebration in honour of the tercentenary of the publication of the "De Motu Cordis" was formally opened on Monday, May 14th, when the delegates from all over the world who had accepted the invitation of the Royal College of Physicians of London were received by the King at Buckingham Palace at 11 A.M. There were presented to the King upwards of 100 delegates representing nearly 30 countries, by Sir JOHN ROSE BRADFORD, whose formal introduction of them was in the following terms:—

"By Your Majesty's gracious invitation we are gathered here to-day to celebrate the Three Hundredth Anniversary of the first publication of William Harvey's famous book, the so-called 'De Motu Cordis,' in which he announced to the whole world the discovery already made known by him to his own medical colleagues in his lectures before the Royal College of Physicians. This book Harvey dedicated to His Majesty King Charles the First.

"Harvey's demonstration that the same blood must flow unceasingly round and round the body, visiting its remotest parts, swept away the visionary speculations of his predecessors and paved the way for a scientific explanation of the purpose of the Circulation of the Blood. Thus it is the publication of the

'De Motu Cordis' has been rightly acclaimed as the Birthday of Physiology and of Scientific Medicine.

"Science knows no boundaries of race or nation, and obedient to this doctrine Representatives of Medical Science from many lands have joined with Representatives of the Universities and Scientific Societies of this Kingdom and of the Dominions of your Empire Overseas to pay homage to the memory of this great English Man of Science.

"Your Majesty, in identifying yourself with this Commemoration of Harvey's work, is but treading in the footsteps of your Royal Ancestors. King James the First and King Charles the First both set a true value on Harvey and made him their own Physician, and the latter supplied him with the bodies of deer from the royal herds for his anatomical studies. Harvey constantly brought to King Charles natural curiosities for his inspection, and exhibited to him much of his experimental work. Together also they shared the rare experience of watching the beating heart in a human subject through a defect in the chest-wall produced by disease.

"In the Civil War, too, Harvey stood by his Royal Master and was present at Edgehill, in charge of the young princes, Charles and James, and afterwards at Oxford, where by Royal Mandate Harvey was appointed Warden of Merton College.

"As President of the Royal College of Physicians of London, on whose roll of Fellows Harvey stands out as its brightest ornament, I have the honour to express to Your Majesty the dutiful thanks of every member of this Delegation for the honour of this Reception, by which your Majesty to-day participates in the Celebration for which we are all assembled in the Capital of Your Empire."

THE KING'S REPLY.

"I thank you sincerely for your Address. It is a great pleasure to me to join with my people in welcoming the many distinguished men from my Overseas Dominions, and indeed from all parts of the civilised world, now assembled in London in honour of the Tercentenary of Harvey's immortal discovery.

"I appreciate the comparison drawn in your Address between my part in to-day's ceremony and the action of my predecessors, who befriended Harvey in his life-time. I am proud to think that the Kings of England of that day, recognising Harvey's great gifts, granted their patronage and help in his work, and are thus entitled to the credit of having contributed to the new birth of medical science.

"The importance and value of William Harvey's work cannot be exaggerated. In an age when physiological knowledge was in a state of darkness and chaos, he laid the essential foundation for a science of physiology by demonstrating not only the fact of the circulation of the blood, but the manner in which it took place. He discerned and taught that the true method of scientific progress is by observation and experiment, and it is for this, and not merely as the author of a single discovery, however brilliant and fundamental, that we to-day do honour to the name of Harvey.

"Science, as you truly say, knows no boundary of race or nation. Harvey's own career is an instance of this. He was a graduate not only of our own Cambridge, but also of Padua, which Ancient and illustrious University I am happy to see represented here to-day. His great book was published in Latin, the universal language of learning, and won acceptance for itself and fame for its author throughout Europe. But though science is international, each country's contribution may still bear the marks of the national character. And here we may proudly note that Harvey, in his three-fold capacity as a successful physician in private practice, as physician to St. Bartholomew's Hospital, and as an eminent student and investigator, foreshadowed what is now, and has long been, characteristic of British physiology—the combination of research with medical and surgical practice, allied with a generous devotion to the service of the poor in the public hospitals."

THE RECEPTION BY THE ROYAL COLLEGE OF PHYSICIANS.

The delegates were received at the Royal Colle of Physicians, Pall Mall, at 3 P.M., when academic rob were worn, the library of the College presenting brilliant spectacle. Addresses were received fro universities and academies throughout the world, ea delegate as his name was called shaking hands with t President, and received from him a facsimile of t "De Motu Cordis." The President was seat flanked by the Censors with the insignia of the Colle arranged before them.

The President, having introduced the guests of t College to the delegates, stated that the object the celebration was to pay a tribute of respect Harvey and to the wonderful scientific genius whi he had displayed in bringing about his great discover

HONORARY FELLOWSHIPS.

The PRESIDENT then addressed the assembly. I said that the College authorities felt that it wou be apposite to institute Honorary Fellowships this occasion. There had previously been a fe Honorary Fellows, for instance Lord Dorchester, contemporary of Harvey, was such, and one of t former presidents had instituted on his own initiati the election of Honorary Fellows. But, althou the late King Edward VII. had accepted a Fellowsh in recent years this precedent had not been followe so that it was a new movement on the part of t College to revive or institute the honour, which this occasion would be conferred upon the Earl Balfour, Sir Ernest Rutherford, and Profs. Iv Pyotrocitch Pavloff of the Academy of Sciences Leningrad, and Karl Friedrich Wenckebach, of t Academy of Sciences, Vienna.

At the close of the ceremony the following eulog were delivered :—

EULOGY OF HARVEY BY SIR CHARLES SHERRINGTO

In William Harvey we bear in remembrance c who was Fellow, Censor, Treasurer, and, for a da President-Elect of this College; its benefactor gift and bequest, and part and parcel of its pride a honour being for ever a living spring of knowledge. Ea year he is commemorated in this place by the Harvei Oration, with its historic and distinguished roll orators, among them yourself, Sir, not two years ag

Now Time brings three and a half centuries sin his birth and three from his unforgettable book; a this welcomely representative assembly is met to b witness to the book and to the man. A book can be all of the man, yet, in science, even as in lette the book inalienably is of the man. His book embod not only Harvey's thought, but what his hand at beh of his thought contrived, searched for, and found.

At the Renaissance the spirit of man turned fr an old order, cabined within a rounded scheme things, to move and inhabit for itself afresh. Th new day broke first on scholarship and letters. science it reset the mechanics of the stars before bent to the study of terrestrial life. In this latte adventured first upon the outward forms of organ a organism. Later it turned to explore their inw meaning, the living function itself. For this last s the Renaissance *is* William Harvey.

Yonder his picture hangs. Stripping from it so years we may see him, at two and twenty, hair "l and curling," eyes "black and very full of spiri listening in the steep theatre at Padua to Fabrici who expounds in Latin the parts displayed below the anatomy table.

If to us the scene seem remote, being three centu back, to the young Harvey then and there th centuries seemed little. Aristotle and Galen in liv authority were for him as present in that room as Fabricius speaking. Why, therefore, so remote to much that then surrounded the young Harve The answer comes: Harvey's own work changed perspective of the whole.

Harvey was pupil and fervent admirer of the mast of antiquity. But his famous exhortation to oth

o search out Nature by experiment, he addressed arly to himself. Hence, after Cambridge and Padua, he year of Shakespeare's death finds him as Lumleian ecturer of this College, teaching from first-hand know-edge the surprising heresy and the inviolate truth that he whole blood as one blood circulates the body in wo successive circuits driven by a valved muscular ump—no other than that age-long thrice-veiled nystery, the heart!

Harvey for this discovery employed no means nor ppliance other than had been at men's disposal from lassical antiquity onward. His was the triumphing f the new spirit unaided save by its own freedom. He as the coming of modernity. Not that he was nodern utterly, for he let ten years pass between his iscovery and sending it to press. A slender book; nost of its references to authorities dead 19 to 15 enturies before, but in observation its every state-ient holding to this day. The message of its 49 small ages engendered modern medicine.

The message had to fight its way, and in some uarters did so slowly. Even after 70 years the arned Abercromby's "De Pulsus Varietate," dedi-ated to Robert Boyle, wrote: "More obscure than ne origin of the Nile is, in my opinion, the origin of ne pulse."[1] Harvey relied on the truth and the ıture. He could hardly have guessed the long train f gifted men who were to extend his work generation fter generation onward unbrokenly to Einthoven and tarling, so freshly lost to us, and to those others, o less active, with us to-day and of his own College, ale and Lewis, brilliantly extending by their dis-overies his discovery here in this his city where he ved and taught.

Self-restraint speaks in Harvey's book. To supply 49 small pages a refutation of 19 centuries' tradition f continuous error argues a fine restraint. Yet, once t least, self-revealingly he gives his spirit rein. elaxing his resolve to forego treating of the circu-ation's purpose, he forecasts the uses which must ccrue to the blood in virtue of its circulating; in hat forecast he bursts forth into a luxuriant passage. ts imagery flashes on us a Harvey, other than the larvey austerely proving a solved problem, a Harvey red with constructive imagination facing a problem esh and still to solve; that same Harvey who had sked the heart valves "Wherefore?" and they had old him; the vein-valves and the heart's motions, nd they had told him; a Harvey who on his note-ook's cover in red ink wrote as motto: "Everything s full of Jove!" This Harvey, too, had its part in larvey the discoverer.

Forerunning at two centuries' distance almost word or word the thought of Claude Bernard, Harvey verred: "the very vegetative acts of each item of nimal structure compass results as it were by art, lection and foresight." Harvey's philosophy of Jature was one of the deep springs of his enthusiasm. teading his favourite Virgil he would throw it down, xclaiming in admiration, "The man hath a devil!" lay we not of Harvey himself say in admiration, ephrasing his other phrase, "The man is full of ove!"?

Mr. President, the work of Harvey, the spirit of it o less than the import of it, provides his eulogy and nakes superfluous all other. His great discovery, side from its intellectual worth, secured an item of nowledge, than which no other single item has so erved to grow as from a seed medicine as we now now it. And to engender medicine is to engender a whole world of correlated knowledge and also of eneficence. The circulation of the blood and the neaning of the heart! May we not affirm that modern nedicine does in fact start there? And, that so, we nvisage Harvey in his perspective through the ages. 'ounder of modern medicine! He would himself ıave felt no term can carry richer or lovelier praise rom a grateful world.

[1] "Nili fontibus meo judicio obscurior pulsus origo est," Observationes de Varietate Pulsus. By David Abercromby. London, 1685.

In Memory of William Harvey.

By Prof. Franz Keibel,

ANATOMICO-BIOLOGICAL INSTITUTE, UNIVERSITY OF BERLIN.

The task has fallen to me to say a few words upon the anatomical relations of William Harvey's work, and first we must note shortly the relations of physiology to anatomy. Both sciences have a common origin and for this reason are closely bound together; while even in their terminal ramifications they are at the present day not yet entirely separated. I recall the fact that the wide field of joint physiology is filled for the most part by anatomists.

And so it was, even in higher degree, in the days of William Harvey, and we know that Harvey was not only a supreme experimental physiologist, but also an admirable anatomist. He says of anatomy that it should be learned "not from books but from dissections, not from philosophical dogmas but from investigation of the structure of the body."

Naturally Harvey, like all great discoverers, had his forerunners and left his successors to complete his work, but it is noteworthy that Andreas Vesalius, the great reformer of human anatomy, can only in a very limited degree be counted as a discoverer in spite of his excellent description of the heart. Vesalius could find no holes in the ventricular septum; despite this he assumed the passage of spirits through it, in this case agreeing with his great opponent Galen.

As Harvey's forerunner we must regard the unfortunate Servetus, who in his theological tract "Christianismi Restitutio" (1553) correctly described the lesser or pulmonary circulation. His work was burned with its author, but it has recently been conjectured that it came to the knowledge of Realdus Columbus, who describes the lesser circulation in the same way as does Servetus. But R. Columbo makes no mention of Servetus. Also as forerunners of Harvey should be named Cæsalpinus, Cannani, and Harvey's teacher, Fabricius, from Aquapendente, in Padua. Cannani had discovered the valves of the veins; Fabricius prints admirable illustrations of them. Fallopius should also here be named.

All these had the key of the great riddle in their hands, the riddle of which Harvey says himself at the beginning of his studies with Fascatorius, that "it is so difficult that God alone knows the solution." They knew a series of isolated facts through whose correct employment for inductive conclusions they might have solved the riddle of the function of the heart, but they failed to draw these conclusions, and so there belongs to William Harvey the full glory of having discovered the circulation of the blood and the function of the heart.

As followers-on of Harvey's work should be named Marcellus Malpighi, the discoverer of the blood capillaries, and Aselli, Pecquet, and Rudbeck, the discoverers of the lymph and chyle ducts. Harvey indeed freely uses the word "capillaries," but only for the finest branches of the arteries. He had rigidly deduced the connexion of the arteries with the veins, but never demonstrated it; the demonstration of this connexion was achieved by Malpighi, who employed the lung and urinary bladder of the frog. The discovery of lymph and chyle ducts are to be regarded as important supplements to the doctrine of the circulation of the blood. Malpighi's discovery falls in the year 1661. Harvey did not live to see it, having died in 1657, four years previously. In 1665 came Malpighi's discovery of the blood corpuscles.

A certain time was still needed before the doctrine of the circulation of the blood was accepted, so deeply rooted were the errors of Galen and so great the respect for the old physician who for centuries had been worshipped as a saint.

And naturally there now arose objectives and new lines of inquiry. I may mention here only the atrio-ventricular bundle, whose discovery by William His, junr., has been made during the lifetime of most of us, the bundle that has brought the most important revelations of the function of the heart.

Nor must we forget that Harvey was a warm champion of the comparative view and is therefore to be regarded as one of the founders of comparative anatomy.

But even the most recent researches into the heart and circulation rest on the foundation that Harvey with insurpassable and masterly wisdom laid down, and this foundation will endure so long as our learning endures.

Prof. Chauffard's Tribute.

Prof. A. Chauffard (Paris) expressed his gratification at being invited to pay a tribute to Harvey, not only as delegate of the Académie de Médecine, but on behalf of the French medical profession as a whole. To speak of Harvey and his book was a real joy to the physician. The general character of his scientific work was remarkable for three things—its courage, its maturity, and its modernity. Although the first blow against Galen's doctrines had been struck by Vesalius in 1555, and Servetus and R. Colombo had partly foreseen the existence of a pulmonary circulation, Harvey's theories ill accorded with current opinion and raised a storm of opposition. Willis said that no man who had reached the age of 40 years could be found who would adopt them. A work of courage, Harvey's book was also mature, for the oral report on his investigations had been given before the Royal College of Physicians in 1616, 12 years before its publication. The interval was filled by the long period of silent research, necessary to all great discoveries, in which the proofs were made complete and final. Genius might be called "a long patience." The third feature of Harvey's work was its modernity, for none of our present methods, such as could be known and employed at his epoch, were unfamiliar to him. Furthermore, he well realised certain of the clinical results of his discovery, though it was left to Lavoisier, a century and a half later, to reveal the physiological functions of the circulation of the blood. Harvey's book, however, contained more than the story of the circulation; it opened the road for all future research. New conquests had since been made —auscultation, graphic registration, radiography, electro-cardiography, and the gauging of arterial tension—but all these acquisitions of modern science had served to complete and crown Harvey's discoveries. They had contradicted and modified nothing. Nor must he be remembered only as the discoverer of the circulation; his published work was of infinitely greater scope, and even that was incomplete, since many of his writings had perished. What he wrote abounded in the astonishing variety and novelty of his period, and the man was in no way inferior to his work. Thus he had been one of those rare geniuses who are true benefactors of mankind.

A Congratulation from Athens.

The Greek Minister in London, M. Caclamanos, representing the University of Athens, presented on behalf of that University an address written in ancient Greek, and illuminated on vellum, the case bearing on it the owl of Pallas. The gist of the address was to trace the origins of medicine, in accordance with Galen, from chance discovery to systematised pursuit of an art, and thence to instructed teaching in treatment. Egyptian practice, the oldest in medicine, was held to have been based on casual findings; while the medicine of Hippocrates was based on reason, experiment, and the study of nature. With Galen we have the art and science of medicine divided into three sections, dealing with the chemical constituency of the human subject, the formation of the embryo, and the investigation of the structure by anatomy. Harvey's knowledge was based upon the study of these principles, and after 17 years of labour and experiment he discovered the circulation of the blood. The English nation did right to celebrate the three-hundredth anniversary of the writing of the famous treatise "De Motu Cordis," and the University of Athens was joining in the congratulations.

Banquet at the Grocers' Hall.

On the evening of Monday a banquet was give by the Master and Wardens of the Worshipfu Company of Grocers in their splendid City hal when the Master, Lieut.-Colonel Francis W. Heatl presided over a company, which included as we as the delegates, Ministers, and Peers, the Master the Rolls, the President of the Royal Society, an the official heads of many seats of learning, of th medical corporations, and of the medical services.

After the loyal toasts had been drunk, the healt of the Delegates was proposed by Lord Hanwortl the Master of the Rolls, who briefly set out the stor of the Grocers' Company from its inception 50 years ago, indicating also that the site on which the were dining, though not the actual hall, had bee occupied by the Company since 1653. Willia Harvey, he added, might well have dined here wit his brother Daniel, who was a member of the Guil Pointing out that the term grocer implied one who dea "en gros," he showed how the trading compar had developed as a Guild and had come to acqui the position to which it had attained as a civic for and as a great administrator of money in the cau of charity and education, while the specially medic nature of their activities had been inherited from previous union with the Society of Apothecarie He welcomed, in cordial terms, the representativ present from 28 countries, assembled to-day honour of Harvey, whom he ranked with Newt and Darwin as men who had been determined " learn what is true that they might do what is right He referred to the splendid courage showed by Harve not only in his defiance of tradition when worki along his individual lines, but in his attitude towar criticism later. To intelligent inquiry he ga reasoned reply, but to wild animadversions like tho of a certain Dr. Primrose, he replied not at all—in t words of Wordsworth "a primrose by the rive brim, a yellow primrose was to him, and it was nothi more." He coupled with the toast the names of Pr J. Van Der Hoeve, of Amsterdam, and Prof. G. Monrad-Krohn, of Oslo, and suggested that t former would be in his element in an after-dinn speech, as he was an authority on mental states association with digestion.

Prof. Van Der Hoeve replied in excellent Englis with an eloquent acknowledgement of the hospitali offered to the delegates, both by the Grocers' Compa and elsewhere, and said that he looked forward the visits to be paid to Oxford where Harvey had be Master of Merton, and Cambridge, where at Cai he had received his education.

Prof. Monrad-Krohn associated himself with t sentiments of the previous speaker, and, going to refer to the last time when he was in Engla as a delegate to the International Congress of Medici in 1913, said that he hoped that those internatio meetings would soon be revived again. He w moved, he said, to this reflection because Harv must always be regarded as an international fig who, though educated primarily in England, ow to the continent, especially to Padua, much of t learning which enabled him to make his gra discovery. But Harvey, he held, illustrated in marked manner the British mind, namely t independent attitude which refuses to accept conclusions of others simply because they receiving common acceptance.

The toast of "Prosperity of the Worship Company of Grocers," was proposed by Sir Jo Rose Bradford, who pointed to the great record charity and hospitality possessed by the Compa throughout its long life, and never more splendi exemplified than in this banquet given to the lead medical representatives of 20 countries, and t official heads of the medical profession in Gr Britain. The guests were thus representative medical education all over the world, and this v appropriate for the hospitality of the Grocers' Co pany, inasmuch as, renowned though all the C

uilds were for the exercise of this virtue, no Guild in ondon had done so much for the cause of medical search as the Worshipful Company of Grocers. For ie past 40 years the Company, he continued, had ssisted others to play Harvey's great game of search, both by their foundation of the Grocers' esearch Scholarships, and their noble generosity the Lister Institute, a generosity which had been xercised in a particularly timely manner, seeing ie damage that was being done by prejudice to the use of science in this country.

The Master, in a deliberately brief response, mphasised the pride which the Company took in rthering the cause of medical research and wished at the direct descendant in the female line from arvey, the Rev. Rossendale Lloyd, had been present the dinner.

THE DEMONSTRATIONS.

WILLIAM HARVEY AND THE CIRCULATION OF THE BLOOD.

A REPRODUCTION OF HARVEY'S ORIGINAL EXPERIMENTS DISPLAYED BY CINEMATOGRAPH.[1]

By Dr. H. H. DALE and Sir THOMAS LEWIS.

AMONG the items suggested for the tercentenary lebration of the publication of the "Exercitatio natomica de motu cordis" was the reproduction, the form of a series of demonstrations, of the ssections and experiments made by William Harvey mself, which formed his experimental proof of the rculation of the blood. We were invited by the oyal College of Physicians of London to organise ch a group of demonstrations, if we regarded it practicable.

On considering the proposal in detail, we came to ie conclusion that it would be difficult to ensure ie complete success of the scheme in this form. ll Harvey's experiments, indeed, are simple, and sy to reproduce; but some of the most important e such as, for one reason or another, do not lend iemselves readily to a direct demonstration of the nd proposed.

In some cases the phenomenon to be observed is ie which few can see at one time, and which cannot, the other hand, be produced several times on the me preparation. In others it is one which can reproduced with ease and frequency in the boratory, but not with the certainty at a particular oment which a public demonstration demands. In very case, again, the fact observed is now so familiar at its demonstration would have little interest by self. The whole interest lies in its historical gnificance, as a fact newly observed by Harvey, nd as a step in the argument by which Harvey ogressed from the knowledge of his time to the scovery which laid anew the foundations of hysiology on an experimental basis.

For all these reasons we formed the opinion that ie object in view could best be attained by making nematographic records of the things which Harvey w and of the experiments which he made, and by ranging these in logical sequence, in relation to his gument. To this suggestion the Royal College of hysicians gave their approval and their practical pport.

In making the film we have acted throughout in nsultation, but one of us (T. L.) has had the main sponsibility for its general scheme and arrangement, hile we have shared the performance of the xperiments. We have endeavoured to limit the emonstration to preparations which Harvey probably ade, and to experiments the performance of which e describes or implies in his writings.

It has been necessary, of course, to adapt Harvey's ethods of performing the experiments and displaying their results, so as to make them suitable for photographic record. Modern knowledge has also enabled us to use exclusively animals deprived of all sensation, either by destruction of the brain or by heavy dosage with an anæsthetic. Apart from these differences, we have employed only the simple means available to Harvey, and have endeavoured to carry out the experiments as Harvey himself performed them, and to record the results as he saw them.

Description of the Film.

The film opens with Cornelius Jansen's portrait of Harvey, which hangs in the Royal College of Physicians, London. The famous physician is seated. The hands of the picture are now seen on an enlarged scale and are represented as moving to take up an ancient treatise. We look over his shoulder to see a few pages of Galen's "De Venarum et Arteriorum Sectione," and his "De Usu Partium," of the "De Fabrica" of Vesalius, and the "Questiones Peripateticæ" of Caesalpinus, these being among the relevant works to which Harvey had access. Galen's doctrines, the dominant views in Harvey's time, are summed up briefly by means of a diagram. They are the doctrines that formed Harvey's starting-point. In part he substantiated Galen's views, in large part he refuted them as a result of the experiments which the film exemplifies, presenting them in the five following sections, each marked by an appropriate heading and diagram.

1. *Auricular Ejection.*—The first demonstration gives the evidence presented against the view that the ventricle fills by suction. It is the evidence of the normal sequence of chamber contraction and of the pumping of blood from auricle to ventricle.

2. *Ventricular Ejection.*—Here briefly are the main heads of evidence that the arteries are passive, that they are filled by the forcible ejection of blood from the ventricle into them. When the ventricle contracts it pales, becomes small and hard, the arteries expand and from the cut arteries blood gushes forth.

A brief summary of previous views relating to the pulmonary circulation is interposed, and the film proceeds to Harvey's third series of demonstrations.

3. *Passage through the Lungs.*—Pores in the interventricular septum cannot be demonstrated. The blood leaves the right heart by the pulmonary artery; it cannot return past the pulmonary valves. The presence of a way through the lungs to the left heart is demonstrated by injections.

In three steps Harvey has now shown that blood passes from the veins to the arteries, following a pulmonary course in so doing. He now passes on to his most crucial observations and original conclusions, illustrated in sections (4) and (5); it is at this stage that he first expresses the view of continuous motion and of movement in a circle; here his views diverge most notably from those of his predecessors.

4. *Continuous Movement from Veins to Arteries.*—In stating this evidence, he lays stress upon the quantity of blood which he calculates must be ejected from the left ventricle at each systole; this blood does not return. He calculates from simple data that the heart must within a short space of time eject more blood than is to be found in the whole body. Continuous motion can be displayed by obstructing the main veins or main artery, for the vessel empties beyond the obstruction and the blood accumulates behind it in each case.

5. The *Passages from Arteries to Veins* forms the final demonstration. The movements of blood in the human limb are studied; by obstructing now the artery and now the veins, the former is shown to fill from the centre, the latter from the periphery. Similar conclusions are formed by noting the effects of cutting through veins and arteries of living animals in their length; the former bleed peripherally, the latter centrally. Finally, the function of the venous valves, their control of the direction of the venous blood stream, is fully displayed in the human limb.

[1] The Demonstrations arranged by the Royal College of hysicians in the Physiological Department of University ollege, London, were given on the mornings of Tuesday and ednesday, May 15th and 16th.

His experiments complete, Harvey writes his book. The last part of the film represents him turning the pages of this work; his hands close the book and lay it on one side, before becoming still.

THE HEART-LUNG PREPARATION.

RECENT ADDITIONS TO OUR KNOWLEDGE OF THE CIRCULATION.

By Prof. E. B. VERNEY.

THE introduction of the experimental method to the solution of biological problems has made possible, and marks the beginning of, a series of investigations and discoveries to which the degree of control which we now possess over both physiological and pathological states in man, is directly and solely attributable.

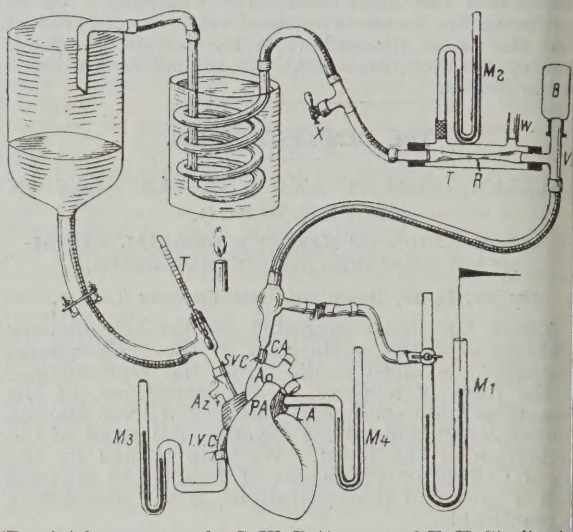
During the last 300 years physiological problems of fundamental moment have appeared and have been solved in rapid succession, the simultaneous extension of the mathematical and physical sciences on the one hand supplying effective weapons for their investigation, and on the other aiding in the rational interpretation of the results obtained. In the history of the physiology of the circulation, just as in that of any other branch of scientific knowledge, the discovery of a relationship of cause and effect between two phenomena has initiated attempts at formulating this relationship in a quantitative manner. And the success of such attempts is directly proportional to the degree to which uncontrolled and disturbing factors can be excluded from the investigation. The necessity for such an exclusion has prompted, therefore, in recent years the expenditure of a large amount of thought and practical ingenuity in the task of reducing a physiological problem to its simplest possible terms, in the hope that the accurate sketch so made of the fundamental processes at work may later be amplified so as to take its true share and position in the complete picture of the physiology of man.

Recent advances in the study of the circulation illustrate this tendency in contemporary thought and work. Sympathetic stimulation quickens the heart-rate, vagal stimulation slows it. Is the increased frequency in fever due to the effect of temperature directly on the pacemaker, or indirectly through the intervention of the cardiac nerves? During exercise the pulse accelerates, the stroke output and minute output of the heart increase. Is the acceleration a necessary accompaniment of an increased energy expenditure by the heart muscle, or are the two phenomena mutually independent? It is clear that, in order that questions such as these may be answered with a reasonable hope of truth, and especially if it is desired to probe more deeply into the mechanism by which the mammalian heart reacts to changes in the work which it is called upon to perform, a preparation must be available in which the heart is freed from all nervous control, and in which the supply of blood to the right auricle and the pressure against which the left ventricle ejects its contents, are under direct experimental control.

Such a preparation came into being chiefly through the ingenuity of the late Prof. E. H. Starling, and the researches which he and his pupils undertook with it have thrown a flood of light on the mechanism by which this organ reacts to changes in its environment.

The preparation was shown at the Harvey Tercentenary Celebrations by the Royal College of Physicians of London, and Starling's "Law of the Heart" demonstrated. The arrangement of the preparation is shown in the figure here given.

Blood passes from the venous reservoir on the left of the figure to a cannula provided with a thermometer and tied into the superior vena cava (SVC), thence to the right auricle, right ventricle, pulmonary artery, lungs, left auricle, left ventricle and aorta (Ao), through a second cannula tied into the brachiocephalic artery (CA), to the peripheral resistance TR. This is composed of a thin rubber tube R enclosed by a glass tube T, the air in the space between the rubber and the glass being subjected to any required pressure (measured by the manometer M2) by means of a hand bellows attached to the tubulure W. Thus the left ventricle is compelled, in order to eject its charge, to overcome this resistance which may be maintained constant or varied at will. From the peripheral resistance the blood flows through a warming coil to the venous reservoir to repeat the circuit already described. All the vessels conducting blood to and from the heart are ligatured with the exception of the superior vena cava and the



(Reprint from a paper by S. W. Patterson and E. H. Starling in the *Journal of Physiology*, 1914, xlviii., 357.)

brachiocephalic artery, both of which are provided with cannulæ as already described. Manometers M3 M4, may be connected to cannulæ tied into the inferio vena cava and left auricle respectively, and th pressures therein registered. A third manometer, M7 is connected to a side limb of the brachiocephali cannula and records the arterial blood pressure The lungs are not shown in the figure. A cardiomete is placed over the ventricles, and changes in thei volume registered by connecting it to a piston recorder In such a preparation, then, the inflow to the heart— alterable at will by adjusting the screw clip on th venous reservoir tube—the temperature and composi tion of the circulating blood, and the degree o peripheral resistance are under rigid experimenta control, and the systemic output of the heart ma readily be measured by taking the time of outflow of given volume of blood from the T-tube X.

Changes in the rate of venous inflow or in th peripheral resistance are found to be without effec on the rate of the heart, this being determined solel by the temperature of the blood-supply. Furthermore changes in rate occasioned by alterations in th temperature of the blood do not influence the minut output of the heart, this being determined solely b the venous inflow. Any increase in the work whic the heart is called upon to do is accompanied b an augmentation in its diastolic volume, be thi increased work occasioned by a rise in the peripher resistance or by an increase in the venous inflow The heart, therefore, dilates in order to do more work the energy liberated by each contraction bein determined by the initial length of the muscle-fibr just as is the case in skeletal muscle. This relationshi between the length of the heart-fibre and its power o contraction was called by Starling "the law of th heart."

More recent experiments by Starling and h pupils have shown that there is a direct linea relationship between the diastolic volume of the hear and its oxygen consumption. During the cours of an experiment with the heart-lung preparation

t is found that with a constant output of mechanical work the heart gradually dilates—loses its "tone"—the dilatation being accompanied by a corresponding increase in the oxygen consumption. It has become possible, therefore, to define the tone of the heart muscle in terms of its mechanical efficiency, that is to say, in terms of the ratio between the external work performed and the total energy liberated over a given period of time.

Contributions to medicine of such fundamental importance as these could only have been made on the heart freed from the multitude of influences, nervous and chemical, which serve to complete the picture of its power and means of adaptation to changes in the work which it is called upon to perform. And now by the experimental superposition of these "influences" upon the initially isolated heart, one is becoming able to visualise with much more precision than has hitherto been possible, their relative importance and actual share in such a complex cardiovascular picture as is presented for example in muscular exercise or in heart failure in man.

The demonstration of the heart-lung preparation emphasised one method of approach to physiological problems connected with the circulation, a method of approach which has been amply justified in its conception by the results of far-reaching significance which have already been obtained through its prosecution.

Luncheon to Delegates and Guests in the Great Hall of St. Bartholomew's Hospital.

On Tuesday, May 15th, a luncheon was given by the Treasurer, Almoners, and the Medical Staff of St. Bartholomew's Hospital to the delegates and guests to commemorate William Harvey, physician to the hospital, 1609–1630. The attendance was large, the chair being taken by Lord Stanmore, treasurer of the hospital. After the Chairman had welcomed the delegates and guests, Sir Wilmot Herringham, consulting physician to the hospital, gave an address on Harvey's connexion with the hospital. He described Harvey's work with the hospital, pointing out that he drew up rules for the regulation of the patients. Among these were that no one should be admitted for trivial or incurable diseases, and that those suffering from venereal disease should be isolated. Also, that no patient should stay in the hospital beyond a certain time, and those who refused to obey the rules or to take their medicine should be summarily discharged. He further ordained strict rules for the staff, the chief of which was that the surgeons should be strictly under the thumb of the physicians. Sir Wilmot pointed out that Harvey was almost as much of a surgeon as a physician, and it was because the physicians of that time were the better educated members of the profession that they dominated the surgeons, this being the *raison d'être* of Harvey's discriminating injunction. The speaker drew attention to the fact that Harvey was a cultured man. As witness of this he was sent by King Charles I. to choose pictures for him on the Continent. Harvey lost his post in the hospital on account of his allegiance to, and friendship with, the King. Harvey was a staunch family man and a man generous both in public and private life. He was a friend of the learned men of the day, the Earl of Arundel, John Selden the great jurist, Hobbes the philosopher, and Bacon. It was Harvey who said of Bacon that he taught philosophy like a Lord Chancellor. Sir Wilmot summed up the characteristics of Harvey when he said that he was a scientific man in the modern sense of the word, and his name is linked with a discovery greater than any made by Hunter, though Hunter, coming later, possessed deeper knowledge in particular directions. Hunter may be termed the father of pathology and Harvey the father of physiology.

Sir John Rose Bradford returned thanks to the Governors of the Hospital for their hospitality and paid tribute to Sir Wilmot Herringham for his wise, humorous, and eloquent address on Harvey, declaring that of all the speeches in memory of Harvey none would live longer.[1]

Lord Stanmore replied on behalf of the hospital.

Conversazione in the City.

On the evening of Tuesday the Prince of Wales attended a reception held by the Royal College of Physicians at the Hall of the Merchant Taylors in Threadneedle-street. The President and Lady Bradford received a large gathering of delegates, Fellows of the College, and their guests, and the evening was spent in conversation, to the strains of the band of the Welsh Guards.

List of Delegates.

Representation of Foreign Countries.

Argentine.—University of Buenos Ayres: His Excellency Dr. José Evaristo Uriburu.

Austria.—Academy of Sciences, Vienna: Prof. K. F. Wenckebach.

Belgium.—Royal Academy of Medicine, Brussels: Prof. P. Nolf. University of Louvain: Prof. Bouckaert.

Czecho-Slovakia.—University of Prague: Prof. Frantisek Mares and Dr. Syllaba.

Denmark.—University of Copenhagen: Prof. Oluf Thomsen.

Egypt.—University of Egypt, Cairo: Dr. A. A. Ismail.

Finland.—University of Helsingfors: His Excellency M. A. H. Saastamoinen.

France.—University of Paris: Prof. Pierre Teissier. Academy of Medicine, Paris: Prof. A. Chauffard. Pasteur Institute, Paris: Prof. Delezenne.

Germany.—University of Berlin: Prof. F. Keibel. University of Frankfort: Prof. A. Bethe. University of Leipzig: Prof. M. Gildemeister. Prussian Academy of Sciences: Prof. Max Rubner.

Greece.—University of Athens: His Excellency Demetrios Caclamanos.

Holland.—University of Leyden: Prof. J. A. J. Barge. Royal Academy of Sciences, Amsterdam: Prof. J. van der Hoeve.

Hungary.—University of Budapest: Prof. Lajos Nékám.

Italy.—University of Bologna: Prof. M. L. Patrizi. University of Padua: Prof. A. Castiglioni. Academy of Medicine, Rome: Dr. Aldo Castellani, K.C.M.G.

Japan.—Universities of Japan: Mr. W. Moriya, Secretary to the Japanese Embassy.

Norway.—University of Oslo: Prof. G. H. Monrad-Krohn.

Poland.—University of Warsaw: Prof. G. Modrakowski.

Roumania.—University of Bucharest: Prof. D. Ionescu and Dr. S. Lalu.

Russia.—University of Kazan: Prof. A. Samoylov. Academy of Sciences, Leningrad: Prof. I. P. Pavlov.

Sweden.—University of Upsala: Prof. Gustav Göthlin. Royal Swedish Academy of Sciences, Stockholm: Prof. J. E. Johansson.

Switzerland.—University of Berne: Prof. Leon Asher. University of Geneva: Prof. Maurice Roch.

United States of America.—Harvard University: Prof. Stanley Cobb. Johns Hopkins University: Prof. F. J. Goodnow and Prof. W. H. Welch. University of Pennsylvania: Prof. W. H. F. Addison. College of Physicians, Phil.: Dr. F. R. Packard. Rockefeller Institute: Dr. Rufus Cole.

British Representatives: Dominions Beyond the Seas.

Australia.—University of Sydney: Dr. C. B. Blackburn.

Canada.—University of Toronto: Dr. R. D. Rudolf.

India.—University of Calcutta: Sir Leonard Rogers.

Malta.—University of Malta: Dr. Edgar H. Ferro.

New Zealand.—University of Otago: Dr. Daniel Colquhoun.

Tasmania.—University of Tasmania: Dr. John Bruce Hamilton.

British Isles.

England and Wales.—Royal College of Surgeons: Sir Berkeley Moynihan, President. Society of Apothecaries: Dr. R. Whiteside Statham, Master. University of Oxford: Sir Farquhar Buzzard, Regius Professor of Medicine, and Sir Archibald Garrod. University of Cambridge: Sir Humphry Rolleston, Regius Professor of Physic. University of London: Lord Dawson of Penn. University of Durham: Sir Thomas Oliver. University of Manchester:

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[1] The address will appear in full in the next issue of the St. Bartholomew's Hospital Gazette.

Prof. F. Craven Moore. University of Birmingham: Sir John Robertson. University of Liverpool: Prof. John Hay. University of Leeds: Dr. J. B. Baillie, Vice-Chancellor. University of Sheffield: Frof. A. J. Hall. University of Bristol: Prof. Edward Fawcett. University of Wales: Prof. T. Graham Brown. Royal Society: Sir Ernest Rutherford, President. Medical Society: Mr. H. W. Carson, President. Zoological Society: Duke of Bedford, President. Royal Society of Medicine: Sir James Berry, President. Harveian Society: Dr. Herbert French, President. The Lister Institute: Major-Gen. Sir David Bruce. Physiological Society: Prof. Joseph Barcroft. Anatomical Society: Dr. E. Barclay-Smith. Pathological Society: Prof. H. R. Dean. Ministry of Health: Sir George Newman. Medical Research Council: Sir Thomas Lewis. Naval Medical Service: Surgeon Vice-Admiral A. Gaskell, Director-General. Army Medical Service: Sir Matthew Gregson Fell, Director-General. Royal Air Force Medical Service: Air Vice-Marshal D. Munro, Director. Indian Medical Service: Lieut.-Colonel J. K. S. Fleming. British Association: Sir Charles Sherrington. British Medical Association: Sir Robert Philip, President. London School of Hygiene and Tropical Medicine: Dr. Andrew Balfour.

Scotland.—University of St. Andrews: Prof. Adam Patrick. University of Aberdeen: Prof. J. A. MacWilliam. University of Glasgow: Prof. T. K. Monro. University of Edinburgh: Sir E. Sharpey-Schafer. Royal Society of Edinburgh: Mr. A. Logan Turner. Royal College of Physicians: Dr. Robert A. Fleming, President. Royal College of Surgeons: Mr. Alexander Miles, President. Royal Faculty of Physicians and Surgeons, Glasgow: Dr. G. H. Edington, President.

Ireland.—University of Dublin (Trinity College): Prof. A. F. Dixon. University of Belfast: Prof. J. A. Lindsay. Royal College of Physicians: Dr. W. A. Winter, President, Royal College of Surgeons: Mr. A. Fullerton, President.

Corporation of Folkestone (Harvey's Birthplace): Mr. Reginald Gilbert Wood, the Mayor. King's School, Canterbury (Harvey's School): Mr. Algernon Latter, late Headmaster. St. Bartholomew's Hospital (Harvey's Hospital): Lord Stanmore, Treasurer. Caius College, Cambridge (Harvey's College): Sir Hugh Anderson, Master. Merton College, Oxford (where Harvey was Warden): Mr. T. Bowman, Warden. Representative of the Harvey Family: The Rev. Rossendale Lloyd.

CHARTERS FOR HOSPITALS.—The London Homœopathic Hospital and the Royal Victoria Hospital, Dundee, have petitioned the Privy Council for the grant of Charters of Incorporation.

NATIONAL PHYSICAL LABORATORY.—A reception will be held at this laboratory at Teddington on June 26th, at 3 P.M., when the work of the laboratory will be open to inspection. Medical guests will be specially interested in the department of radiology. According to the report for 1927 (H.M. Stationery Office. 7*s.* 6*d.*), this department has devoted much time to the problems of X ray protection, particularly in connexion with the revision of the recommendations of the X Ray and Radium Protection Committee. Dr. C. W. C. Kaye, the superintendent of the department, states that the laboratory has dealt with many inquiries for information on this subject from institutions and private individuals, both at home and abroad. Routine tests of X ray protective materials have fallen in number during the year, but the work of inspecting completed X ray installations has increased considerably. The measurement of X ray intensity has received further consideration and the work of foreign investigators in this field has been studied. As a result, it is proposed to undertake experimental work, using a Bencken ionisation chamber in which the ionisation is produced in a gas at high pressure. Work of this kind, it is hoped, will lead to the standardisation of X ray intensity meters. The absolute absorption of X rays of a variety of specific wave-lengths has been measured in several different pure metals. It was the work of Prof. A. E. Owen, sometime secretary of the Rontgen Society, that revealed the important relationship between the wavelength of X rays and their absorption in matter. The accuracy aimed at in the present investigations shows that radiology is well on the way to becoming an exact science, where accurate measurement will be possible. The increasing importance of general radiology has led during the year under review to the formation of a department to investigate the application of the methods of X ray crystal analysis to industrial problems. It would be convenient if the reports of superintendents of different departments of the National Physical Laboratory could be issued in separate parts, since its scope is now extremely wide.

Special Articles.

MEDICINE AND THE LAW.

Removal of Name from Dentists Register.

THE King's Bench Division on May 10th decided an important point under the Dentists Act in the case of Pickup *v.* Dental Board of the United Kingdom. Section 13 of the 1878 Act provides that a person registered in the Dentists Register who has been convicted of a felony or misdemeanour (or has been guilty of infamous or disgraceful conduct in a professional respect) shall be liable to have his name erased from the Register. The question arose as to the meaning of "misdemeanour." Does it mean a misdemeanour triable on indictment or has it the wider meaning of any offence which is less than a felony whether triable on indictment or summarily? The Lord Chief Justice held that "misdemeanour" in Section 13 has the wider meaning. He quoted the judgment of Lord Alverstone in Du Cros *v.* Lambourne (1907, 1 K.B., 40) where the then Lord Chief Justice cited with approval the following passage from a well known text-book: "This word, in its usual acceptation, is applied to all those crimes and offences for which the law has not provided a particular name. . . A misdemeanour is, in truth, any crime less than felony." Lord Hewart was strengthened in this view because Section 13 of the Dentists Act contains a proviso which inter alia directs that a dentist is not to have his name erased because of a conviction for "an offence which, though within the provisions of this section, does not, either from the trivial nature of the offence or from the circumstances in which it was committed, disqualify a person from practising dentistry." This proviso seems to contemplate that the offences might be of a trivial nature and that because of their trivial nature, the person convicted might be allowed to retain his name on the Register. Mr. Justice Avory (who, when at the bar, argued for the opposite meaning of "misdemeanour" in Du Cros *v.* Lambourne) and Mr. Justice Shearman concurred. The result was that the court dismissed Mr. James Pickup's appeal from the order of the General Medical Council that his name be erased from the Register on the ground that he had been convicted of misdemeanour. The point is significant for medical as well as dental practitioners since the same phrase as to conviction for felony or misdemeanour occurs in Section 29 of the Medical Act of 1858, though the proviso as to trivial offences is not there expressed in the statute, but is tacitly left to the good sense of the General Medical Council. An obvious instance of a trivial offence involving no professional disqualification would be a conviction for exceeding the speed limit or some other similar charge inevitable in the case of those whose work obliges them to use a motor-car.

Alleged Delay in Notifying Tuberculosis.

At a meeting of the Carlisle Health Committee at the end of April complaint was made by the medical officer of health of the delay in notifying cases of tuberculosis. Some members of the Committee were inclined to urge prosecution, but their deputy clerk pointed out that there might be a legal difficulty in proving the date at which the practitioner became aware of the patient's infection. It appeared that a circular letter had been sent round to the medical profession a few months before, and the Committee decided to send out another warning. Dr. J. Beard, the medical officer, had stated that there was still a large number of cases in which notification was not received until just before the death of the patient. The complaint was, it seems, of delayed notification rather than of failure to notify. If the delay is due (as was suggested) to a desire to respect the feelings of the patient's family, it is for consideration whether safeguards cannot be provided to reassure the public by preventing publicity.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

University Physical Welfare Fund.

THE new draft Ordinance of the University Courts of the four Scottish Universities is a document of importance. It has been resolved: (1) that it is expedient to make further provision for the maintenance and improvement of the physical welfare of the students attending the universities; and (2) that an addition of 10*s.* 6*d.* should be made to the present matriculation and entrance fees to be applied towards meeting the cost of such provision. Dr. Alexander Morgan, late Director of Studies under the Provincial and National Committees for the Training of Teachers, said at the Edinburgh University Council that to those familiar with the difficulties and hardships of Scottish student life this ordinance would be welcome. It opened out great possibilities of beneficent activities and it would increase the confidence of parents and public authorities in the development of the university education.

The Budget and the Reform of Local Authorities.

The scheme sketched by the Chancellor of the Exchequer means a radical reform of all the local health and medical authorities. The whole financial and administrative systems will be integrated in a way impossible until now. Already the Scottish burghs have begun the active discussion of the proposals as they affect burghal administration. For a generation there has been a growing desire to widen the basis of local administration, and this cannot be effectively done without a reform of rating systems. Whatever modification of detail may be required in adjusting poor-law, public health, insurance, and other medical services, the broad result will secure to Scotland greater efficiency in every leading service. The experiment carried out by the Education Act of 1918 proves that the larger education authority is able to do work that was impossible under the smaller school boards, and the same will doubtless be true of medical services under the reorganisation.

Cream Preservative Once More.

Major Walter Elliot, Under Secretary of State for Scotland, in a letter to Brigadier-General Charteris, M.P., explains that the Board of Health is in agreement with the decision of the Departmental Committee that there shall be no preservative allowed for "double cream." The Secretary of State, therefore, as President of the Board, withholds assent to the suggested delay of "five or six years." Meanwhile, experiments are going on at Cumnock Creamery with a pasteurising plant adapted to the pasteurisation of cream. The claims for this plant are high; but given the proper selection of milk and reasonable care with the process, the results are apparently satisfactory. Further experiments will no doubt be made.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

Inoculation against Diphtheria.

THE winter's epidemic of diphtheria in Paris has clearly shown the value of Ramon's anatoxin. This is obtained by heating diphtheria toxin and adding to it 40 per cent. commercial formalin in the proportion of 1 in 2000. Treated in this way the toxin becomes atoxic, whilst keeping its antigenic properties. Anatoxin is obtainable in boxes of three ampoules, each containing 2·0 c.cm., the liquid being tinted green. Either two or three injections are given, the first being 0·5 c.cm., and the second 1·0 c.cm., given a fortnight after the first. In 87 per cent. of cases the Schick reaction becomes negative after the second, which makes a third injection unnecessary; if required it is given after an interval of a week. In case of urgency it may be desirable to produce a passive immunity with purified serum.

Zoeller and Ramon now recommend vaccination via the nasal mucous membrane for patients who object to subcutaneous inoculation. Against diphtheria they protect the patient by instilling concentrated glycerinated antitoxin into the nose every second day. Two and sometimes three courses of treatment, lasting six days, with intervals of a week to a fortnight between them, have proved sufficient to convert a positive into a negative Schick reaction. The method has the advantage of being easy to apply and of not provoking any vaccinal reaction, but it is less precise than subcutaneous inoculation, and fairly large doses of antigen are required. Local vaccination is said to be as successful in preventing dysentery, tetanus, and scarlet fever, as it is in the prophylaxis of diphtheria.

Intermittent Albuminuria Traced to Ingestion of Milk.

Widal and his school have shown that milk can produce colloidoclasic crises in persons who have hepatic insufficiency, but as far as we know it has never been noticed that ingestion of milk may be followed by the appearance of albumin in the urine. This is the original feature of a case reported recently by Barbier. The patient had albuminuria every morning and evening, because at breakfast and dinner he drank a glass of milk. When this habit was discontinued the albumin disappeared. It would be interesting to know whether anyone else has observed a similar phenomenon.

Treatment of Human Trypanosomiasis.

Tryparsamide is generally used in the treatment of trypanosomiasis, but at the Pasteur Institute a new remedy has been produced under the name of "270 Fourneau." This product has been tried in the French Congo, and the results already show that its effects are entirely comparable with those of tryparsamide. The best indication of cure is the return of the cerebro-spinal fluid to normal, and this occurred at the end of the first course of injections, provided that at least 0·25 g. per kg. of body-weight had been injected. Administered in one long course, "270 Fourneau" seems to give results as satisfactory as, if not better than, tryparsamide. It is injected subcutaneously.

Biological Reactions in Tuberculosis.

The diagnosis of latent tuberculosis is exceedingly difficult, and in order to be certain, it is necessary to make use of biological reactions. In children a cuti-reaction fulfils all needs, but in adults one must have recourse to the reaction of fixation. The cuti-reaction is positive in persons who have harboured tubercle bacilli for even a brief period, and is thus positive in 80 to 97 per cent. of adults, which makes it almost valueless in practice. The reaction of fixation, however, is only positive in 10 to 15 per cent., and according to Prof. Rieux it answers the question of infection without ambiguity.

Raymond-Hamet has presented to the Académie des Sciences a report of his studies on the plant uzara, which contains an active glucoside uzarin. This is more soluble than digitalin, less toxic than ouabain, and should take equal rank with these two glucosides as a myocardial tonic and stimulant.

Three surgical courses will be given this year at the surgical clinic of the Salpêtrière, Paris, under the direction of Gosset and Loewy. Each course is of one week, and they will begin on May 14th, June 25th, and Dec. 17th. Practical operations will be performed by those attending, and the number of students is limited to ten. Particulars may be had from the Secrétariat Faculté de Médecine, 12, rue de l'Ecole de Médecine, Paris. An announcement in English of these courses appears in the *Presse Médicale* of April 25th.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Copper Salts in Anæmia.

DISCOVERIES which may have great medical significance were announced at the recent meeting of the Federation of American Societies for Experimental Biology. Dr. E. B. Hart and his colleagues in the department of agricultural chemistry of the University of Wisconsin noticed that while their rats could be cured of anæmia by the ash of liver or lettuce, they could not be cured by any kind of inorganic iron salts. They observed also in the successful ash a bluish tinge suggestive of copper salts. Recollecting the copper content of the respiratory pigment (hæmocyanin) of certain crustacea they proceeded to test a diet in which ferric chloride was supplemented by copper sulphate. Striking cures resulted. It is suggested that copper may be necessary as a catalyser in the formation of hæmoglobin. At any rate copper is now to be used experimentally by certain of the larger hospitals in the diet of patients suffering from anæmia.

That Congo red is a "non-specific antitoxin" is claimed by Prof. P. J. Hanzlik and Prof. E. M. Butt, of Leland Stanford University. The property is said to be shared by other colloidal dyes, but Congo red seems to have been the most effective in preserving guinea-pigs, rabbits and pigeons from lethal doses of botulinus and diphtheria toxins.

Research Defence.

The new quarterly journal for laymen, entitled *Medical Progress*, is published by the American Association for Medical Progress, which corresponds very closely with the British Research Defence Society. The articles in the first number, all commendably serious and thorough, include one by Dr. Gladys H. Dick on the Control of Scarlet Fever, and a signed article by Dr. Benjamin C. Gruenberg, who is managing director of the Association, as well as Editor of its journal. The Journal will make its appeal to a more intelligent and educated public than that for which *Hygeia* has catered so successfully, but it will have to give more matter before it will gain a large circulation at 25 cents per number. The Association itself has already done a great deal of useful work. It was founded in the belief that the danger of anti-scientific sentiment in the United States, particularly as it affects public health and care of the sick, lies not merely in widespread ignorance regarding scientific discoveries or methods, but in various efforts to discredit the scientific method in medical research and in public health procedure. This hostility exploits the ignorance of the masses and panders to their prejudices. The result is that medical standards are lowered. During the last year the Association has investigated the three groups of cases in which serious reactions followed the administration of diphtheria toxin-antitoxin. Another praiseworthy action of the Association has been an effort to locate and, when necessary, to care for the survivors of those volunteers who risked their lives under Major Walter Reed and his associates in the critical experiments which revealed the ætiology of yellow fever. This work has been done in connexion with the Copeland-Wainwright Bill, which seeks to make Congress responsible for such care in the future. The Association has its headquarters among the member societies of the National Health Council at 370, Seventh-avenue, New York City.

Schistosome Dermatitis.

Last summer, when Prof. Cort of the Johns Hopkins School of Hygiene was collecting snails at the University of Michigan Biological Station on Lake Douglas, he made a painful but quite interesting discovery. He had a number of catches which he brought home in a bucket containing about ten inches of water, and subsequently he removed the snails two or three at a time from this bucket in order to assign them eac to its proper species. In this leisurely process hi left hand was brought into frequent contact with th water; "after about ten minutes a severe prickling sensation, resembling the bites of small insects, wa felt on the back and sides of the wrist." In spite o the immediate application of soap and alcohol pruriginous papular dermatitis developed. Th papules became pustular after 48 hours, and th discomfort was considerable, and lasted altogethe for five days. Similar cases of dermatitis had bee noted throughout the district for a number of years but Dr. Cort apparently was the first helminthologis to be attacked. The offending cercariæ were dul isolated, and made to repeat their performance o Dr. Cort and others. It is interesting that tw human volunteers proved uninteresting to the sam cercariæ that invaded Dr. Cort and others of hi friends avidly enough. An account of Dr. Cort' experiments appears in the *Journal of the America Medical Association* for March 31st.

The New Coolidge Tube.

Dr. W. D. Coolidge announces the successfu completion of an X ray tube which operates at 900,00 volts and discharges a stream of electrons with velocity of 175,000 miles per second. Finding himse unable to build a single tube for more than 300,00 volts, owing to the "cold cathode" effect, Dr. Coolidg designed a cascade arrangement by which the ra are speeded up from one tube to another. Th present achievement does not mark the limit possible attainment by any means. "We expect, says the inventor, "to find that a high-voltag positive ray tube can be constructed along the gener lines of the multi-sectional cathode ray tube. I this case, we should need, according to Rutherfor about eight million volts to produce positive ra having the energy of the highest velocity alpha ra from radium." It is too early to forecast the ther peutic possibilities of the new invention, but radiol gists will have no difficulty in believing that they a likely soon to have a new and powerful instrument their disposal.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 5TH, 1928.

Notifications.—The following cases of infectic disease were notified during the week:—Small-po 321 (last week 376); scarlet fever, 1591; diphtheri 1097; enteric fever, 63; pneumonia, 1323; puerper fever, 49; puerperal pyrexia, 108; cerebro-spin fever, 12; acute poliomyelitis, 9; acute poli encephalitis, 1; encephalitis lethargica, 29; dysenter 16; ophthalmia neonatorum, 111. No case cholera, plague, or typhus fever was notified duri the week.

Cases of small-pox were notified from the following counties: London, 27 (distributed over four metropolit boroughs, Wandsworth 10, Lambeth and Poplar 8 ea Stepney 1); Bedford, 8; Berks, 1; Chester, 1; Derby, Durham, 58; Essex, 2; Gloucester, 5; Lancaster, 2 Leicester, 1; Lincoln, parts of Holland, 8; parts of Linds 4; Norfolk, 1; Northumberland, 9; Nottingham, 10; Sc of Peterborough, 1; Southampton, 1; Stafford, 13; Surr 2, Sussex West, 1; Warwick, 2; Yorks, North Riding, West Riding, 88; Glamorgan, 20; Monmouth, 23.

The number of patients in the Infectious Hospitals the Metropolitan Asylums Board on May 8th–9th was follows: Small-pox, 29 under treatment, 3 under obser tion; scarlet fever, 1550; diphtheria, 2183; enteric fev 34; measles, 1281; whooping-cough, 131; puerperal fev 24 (plus 18 babies); encephalitis lethargica, 68; "ot diseases," 19. At St. Margaret's Hospital there were cases of marasmus and 15 babies (plus 11 mothers) w ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, includ London, there was one death from small-pox, 7 from enteric fever, 89 (52) from measles, 9 (3) fr scarlet fever, 51 (9) from whooping-cough, 33 from diphtheria, 44 (9) from diarrhœa and enter

nder two years, and 73 (19) from influenza. The gures in parentheses are those for London itself.

The death provisionally classified to small-pox was signed to Bradford. It was, we understand from Dr. J. Buchan, that of a man, 51 years of age, vaccinated in fancy, who was admitted to the Small-pox Hospital m the Bradford Municipal General Hospital. The small-x was of a mild character, the primary cause of death ing pernicious anæmia. The fatal cases of enteric fever tside London occurred at Walsall (2), Bath, Manchester, ull, Middlesbrough, each one. Of the 37 fatal cases of easles outside London 4 were returned from Sheffield and each from West Ham, Liverpool, and Manchester; while e figures in Edinburgh, Glasgow, and Dublin for the same ek were 9, 4, and 6. Of the 42 fatal cases of whooping-ugh outside London 10 were reported from Liverpool d 8 from Birmingham.

e number of stillbirths registered during the ek was 315 in the great towns, including 57 in ndon.

Correspondence.

"Audi alteram partem."

A SIMPLE HOOKWORM LARVICIDE.

To the Editor of THE LANCET.

SIR,—In an annotation under this heading in E LANCET of April 21st there is quoted work by . W. O. Fischer, Superintendent of Research in the nd Mines Laboratory, on the effect of common salt i destroying hookworm larvæ. Fischer's paper elf contains no references, yet it is interesting to n back 22 years and reconsider one which might well ve been given, in the shape of work by Lambinet i the Liège coal-mines,[1] reported on by Kuborn at t Academy's session on April 28th, 1906. This ort dealt with just the matters considered by cher and reached conclusions which seem to be se to which he too has come. Manouvriez, of lenciennes, had stated that coal-mines with saline ter were not infected with ankylostomes while se with fresh water were. Lambinet set himself determine, by careful and controlled experiments, ether common salt could be used as a disinfectant mines. He showed that in 2 per cent. salt solution athed hookworm larvæ survived a month, in per cent. 10 to 20 days, in 10 per cent. they died our or five days, in 15 per cent. a few survived for hours, and in 30 per cent. death was rapid. Again, ng parallel sets of cultures, but moistening one h salt solution and the other with water, Lambinet's lts coincided with those of Hayo Bruns, of Berlin, that 3 per cent. salt solution was the lowest con-tration which prevented development to the infec-stage. Finally no development occurred in a stool in eggs, but covered with salt, and to cover stools h this cheap material constituted Lambinet's gestion for the eradication of hookworm infection n mines. Lambinet's work was not received with husiasm; it was altogether too simple for his lience, as good methods so often are. It at all nts seems to map out with sufficient precision the und which Fischer has explored 22 years later. incident is illuminating, as being one of a number recent instances which show that much which is not known concerning hookworm infection by ne of us who are working on the subject was definitely accurately determined even more than 22 years .

I am, Sir, yours faithfully,

aling, May 4th, 1928. CLAYTON LANE.

** Colonel Clayton Lane's letter is a reminder that possess no convenient résumé in a single cover of immense mass of recent knowledge regarding kworm disease in various parts of the world.—ED. L.

[1] Bull. Acad. Med. Belg., 1906, p. 345.

THE TREATMENT OF ULCERATIVE COLITIS.

To the Editor of THE LANCET.

SIR,—The report of the discussion on Ulcerative Colitis at the Harveian Society, and your leading article thereon of April 28th, give such a pessimistic view of the results of treatment in this disease that I feel called upon to add my protest to those of Dr. Hurst and Dr. Ryle, as in my opinion it is quite erroneous to believe that ulcerative colitis is anything like as incurable or fatal a disease as these reports purport to show. It has been my lot to see and treat a large number of such cases, and apart from those seen in private, there are never less than three or four cases at a time in St. Mark's Hospital. The total number of such cases of which I have recent records is 130 of various degrees of severity, with 13 deaths; this gives a mortality of 10 per cent.

My experience has been that about 40 per cent. of patients recover without operative interference. Suitable medication, dietary, and lavage of the colon, combined with serum injections and zinc ionisation, prove sufficient to restore the mucous membrane to a normal condition. The patient is examined periodically with the sigmoidoscope and treatment continued until no signs of ulceration can be seen. Although I have seen very good results from the injection of antidysenteric serum in a few cases, it has completely failed to have any influence on the disease in the majority. The other 60 per cent. of cases have been treated by appendicostomy, either because they were very bad cases to begin with or because non-operative treatment had been given a fair trial and failed. It follows that all the more serious cases have been operated upon.

Of the 130 cases treated: 51 were treated without operation; 79 were treated by appendicostomy.

Of the 51 cases: 27 were definitely cured; 23 were improved and ceased to attend, but cannot be claimed as cures, as they were not examined after they said they were well; 1 died.

Of the 79 cases treated by appendicostomy: 59 were definitely cured; 12 died; 8 improved.

The total mortality therefore was only 10 per cent.

The most troublesome feature of the disease is its marked tendency to recur, but it eventually dies out, and the vast majority of patients are completely restored to health.

One of the commonest errors in treatment is that so often the patient is put upon a diet with insufficient nourishment. Ulcerative colitis is a very exhausting disease, and if recovery is to take place the patient must be well fed. As in the case of tubercle, he requires an increased amount of intake to make up for the increased loss. As a rule, the diet is reduced rather than increased. My experience has been that a full diet should be given. The difference between the residue of a mutton cutlet and a glass of milk by the time it reaches the colon is negligible as regards any effect upon the ulcerated surface. I am constantly seeing cases of ulcerative colitis who, to all intents and purposes, are being carefully starved. It is just as absurd to suppose that a patient with this disease can recover on a starvation diet, as that a patient with phthisis could do so. The improvement that results from feeding such patients on full diet is spectacular. I can almost hear some of my medical colleagues saying, "How ridiculous! A patient with ulcerative colitis cannot digest ordinary food," but why not? Digestion does not take place in the colon, and in these days there are many aids to digestion.

About a year ago I had sent up to me from the country a poor curate who was supposed to be dying from ulcerative colitis. He had had an appendicostomy performed, but was getting no better. He had been ill for 18 months and weighed 5½ st. I had not seen him until he arrived on a stretcher in the nursing home. I found he was reduced to skin and bone, but the sigmoidoscope revealed a normal colon with no ulceration at all. I found he had been fed on small quantities of milk and

Benger's food and the total quantity would not have kept two ordinary sized cats in health. I put him on a full diet gradually, with pepsin and pancreatin to assist his digestion, and in six weeks he put on 3 st. in weight, an average of half a stone a week, and is now perfectly well.

I am, Sir, yours faithfully,

J. P. LOCKHART-MUMMERY, F.R.C.S.

London, W., May 9th, 1928.

HAS THE CAMPAIGN AGAINST VENEREAL DISEASE BEEN A FAILURE?

To the Editor of THE LANCET.

SIR,—In your issue of May 5th Dr. E. Graham Little discusses the merits of compulsory measures in dealing with venereal disease and refers to the legislation promoted recently by the Edinburgh Corporation. I have no desire to enter into a discussion on the merits of the Edinburgh Corporation Bill, but I think it advisable to correct the mis-statements in the latter part of Dr. Little's letter.

The meeting of the Edinburgh division of the British Medical Association, to which he refers, was not called by the promoters of the Bill. Whipping was not indulged in. The meeting was called by the secretary of the division in the usual way, and each member of the division was asked on the billet to bring with him to the meeting the statement by the corporation which had been issued to every medical practitioner in Edinburgh some weeks previously. The meeting was a large one for a divisional meeting, when one considers that the average attendance at such meetings is about 30, while some 60 members attended this meeting. The provisions of the Bill were freely and frankly discussed and every member present was in favour of some action being taken to deal with defaulters. The minority of 11 were in favour of the Bill in so far as the powers vested in the medical officer of health were restricted to information given by medical practitioners only. No motion was proposed, by any member present, against the Bill. In view of the findings of the meeting, the number of members present, and the fact that this is the body which represents the medical profession in the city, the promoters of the Bill were justified in claiming that representative medical opinion in Edinburgh was in favour of some measure of legislation to enable venereal diseases to be dealt with more effectively.

With regard to the opinion of the medical profession in other areas of Scotland, I understand that in Lanarkshire 95 per cent. of the medical men are in favour of a much more drastic measure which has beeen drafted by the V.D officer of the county. Each member of the profession has been circularised and signified in writing his support of a measure on similar lines to that which is being promoted by the Glasgow Corporation.—I am, Sir, yours faithfully,

DAVID LEES.

The Royal Infirmary, Edinburgh, May 8th, 1928.

To the Editor of THE LANCET.

SIR,—The correspondence evoked by my letter of April 21st shows that the subject is one of widespread interest. May I, therefore, comment on some of the points raised. It would seem that my main contentions are admitted. These briefly, are that gonorrhœa, particularly in women, is being inadequately handled, that the results are not to our credit, and that a great increase in in-patient accommodation is required if we are to get anything like even the moderately good results we have obtained in the treatment of syphilis.

It is heartening to find Dr. Burke championing the cause of the V.D. clinics run from premises specially equipped and staffed for the purpose. There is an official tendency to depreciate such clinics on the assumption that patients do not care to be seen attending them, but prefer to go to a department of a general hospital, thus hiding the reason for the visits. Undoubtedly there are such people. Equal there are just as many who think that the special clin is better because it is special. Both classes should considered. At the Lock Hospital we have as mar as we can handle who come for their entire treatmen We find, however, that there are quite a considerab number who come once for a diagnosis, attend son clinic, less labelled or more convenient, for the treatment, and return to the Lock Hospital for the final tests for cure—thus making the best of bot worlds. Clinics attached to the great general hospita have many obvious advantages. They have o weakness, however, which is deplorable, and whi should be remedied; they do not provide bed accon modation in just proportion to the grants given the since the antivenereal campaign of 1917 was started

This present-day interest in venereal disease is n a new thing. History has a habit of repeating itse It is a mistake to think that it is only since the Gre War that venereal diseases have become so prevalen During the mid-Victorian period these diseases we rampant throughout England. This is not surprisi when one remembers that gleet was then consider non-contagious and syphilis was treated by a tw month course of mercury pills. A census taken Acton at Paget's out-patient clinic at St. Bartholomew showed that over 50 per cent. of his patients we venereal. At Guy's the proportion was 43 per cen whilst at the Royal Free it was over 60 per cer Dr. Burke will be interested to note that in Manchest and Salford, with a population of 390,000, there we about 3500 venereal cases treated in one year (186 In those pre-Listerian days pressure on hospital be was not as great as now, and the accommodation f venereal cases was therefore more generous. At S Bartholomew's,[1] for instance, there were 75 beds, Guy's 58, at the Royal Free 26, at the Middlesex 2 at the London 15, and so on. Altogether in Lond hospitals in 1870 there were 374 beds for venere cases, when the population was 3,000,000. Now th are about 200 odd for 7,000,000. The hospitals we receiving no grants then. They are receiving lar ones now. Further comment is unnecessary.

Dr. Graham Little's courteous letter in your iss of May 5th, p. 932, deserves careful considerati because he was the main opponent of the Edinbur Corporation Bill which has just been thrown o Personally I think he was wrong in opposing t second reading, because the action of Parliament l created a feeling of grievance in Scotland. If t Corporation of Glasgow persists, in spite of the fate the Edinburgh Bill, in presenting theirs, I hope he v help to give it a chance of better ventilation. T more discussion there is on these subjects, the more t public will be educated as to their importance.

I have no ambition whatever to see any coloura imitation of the C.D. Acts of 1864–70 re-enacted England. The working of those Acts at that ti depended largely for their success on the staff of Lock Hospital for Women, Mr. James Lane, and Gascoyne. I have still vivid memories of conver tions with the late Mr. Ernest Lane in which recounted how his uncle was publicly vituperat how his letter-box was crammed daily with virulen abusive letters from religious fanatics who said was making vice safe, and how the agitators for rep mentally transferred the moral guilt attached to diseases from the shoulders of the patients to thos the people treating them. I take off my hat to stalwarts in Scotland prepared to face, possi similar treatment. I admire but do not wish emulate.

Reference to treatment was no part of my orig letter, but, as it has been raised, may I be permit two comments. Mr. Peart has advocated vasotom acute gonorrhœa. I have no use whatever for form of treatment in the acute stage. My experience of it dates back some six years ago, w Dr. C. F. Searle, of Cambridge, sent me a patient

[1] Acton on Prostitution, London, 1870, 2nd ed., pp. 81–8

had been thus handled by an enterprising American surgeon. As a result the right testis became gangrenous and had to be removed. Spermatozoa also disappeared from the semen, and there was persistent prostatic neuralgia. The original gonorrhœa was cured, but the price—sterility and loss of one testicle—struck me as excessive. Even in chronic vesiculitis the procedure is not without risks. In acute disease it is, in my opinion, unjustifiable.

Finally, a word about diathermy, and the belief of Dr. Cumberbatch and Dr. Robinson, that it would solve the woman's problem. I have used this method of treatment for five years at the Hospital for Women, Harrow-road. Before doing so, I sat at the feet of Dr. Cumberbatch and Dr. Robinson for some months. I have since sent most of my house surgeons at that hospital to St. Bartholomew's, where they have been shown, most courteously, all the details of treatment. I have described the treatment in my book [2] and given them all the credit due to a definite advance. I have seen individual cases of Dr. Cumberbatch and Dr. Robinson, and confirmed the claim of cure made by them. I have had cases of my own which were brilliant successes under this treatment. And yet I have not found diathermy quite the panacea they believe it to be. Perhaps it is because I get cases that are more serious, cases complicated by such things as syphilis, or pregnancy, suburethral abscess, bartholinitis, or acute salpingitis. If diathermy always gave in cases treated by others the excellent results obtained by Dr. Cumberbatch and Dr. Robinson in their cases the cure of gonorrhœa in women would be very much simplified. But like every other form of treatment it has its failures as well as its successes. If it did away with the necessity for in-patient treatment it would be not only an incalculable boon to suffering humanity but also an enormous saving to the nation in the matter of upkeep. Unfortunately it does not do so. I only wish it did.

I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM.

Harley-street, W., May 6th, 1928.

PULMONARY ATHEROMA.

To the Editor of THE LANCET.

SIR,—The leading article on this subject in your last issue possesses great interest for me, as it recalls a case bearing on this topic recorded by me in 1903, in vol. xxxvi., p. 218, of the Clinical Society's *Transactions*. A girl, aged 21, had been shown by me to the Society in 1901, as a case of congenital morbus cordis, and this view was accepted by most members who had examined the patient. The clinical features were dyspnœa, cyanosis, and attacks of cardiac pain, the latter dating from childhood. There was no clubbing of fingers, and no history of rheumatism or syphilis. The girl was very small for her age, but otherwise fairly well formed. The physical signs indicated great enlargement of the right heart. With the exception of a faint diastolic murmur occasionally audible over the pulmonary artery, where the second sound was very loud as in all areas, there were no adventitious sounds. A few months later the patient began to suffer from nausea, vomiting, and increased dyspnœa. On admission the liver was enlarged and tender, and the ankles were œdematous. Shortly afterwards the patient had a sudden fit of dyspnœa with great lividity and died in a few minutes. At the autopsy the heart weighed 17 oz., and there was great hypertrophy and dilatation of the right side. A few small granulations were seen at the cusps of the pulmonary valves, but there was no further valvular defect. The pulmonary artery showed extreme atheromatous changes in its trunk, extending down to the finest branches in the lungs. The lungs were quite healthy.

This case closely resembles those described by Mrs. Coombs, Clarke, Hadfield, and Todd. But though the enlargement of the right heart was considerable, cyanosis at first was relatively slight. From the history of the symptoms going back to childhood one must conclude that the disease started during intra-uterine life. Dr. Coombs and his colleagues are inclined to attribute the pulmonary lesions to an inborn defect of the pulmonary arterial walls. I would suggest that the arterial disease is more likely to have been due to a toxic condition during fœtal life.

The part played by pregnancy in the production of toxæmic conditions affecting the mother is now well recognised, and it would not be strange if the fœtus should suffer, too, at times.

I am, Sir, yours faithfully,

PERCY KIDD.

Montagu-street, Portman-square, W., May 15th, 1928.

[2] Lectures on Gonorrhœa in Women and Children. Heinemann. 1924.

INJECTION TREATMENT OF VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—We have read with pleasure the instructive letters of correspondents in your issues of April 28th and May 5th, and in reply would make the following observations.

1. The recumbent position is a difficult one in which to insert the needle into the vein which is collapsed. If the patient stand for the insertion and then lie down, this movement may dislodge the needle from the lumen.

2. If the vein be collapsed at the time of insertion of the needle its walls may be transfixed by the needle and the subsequent injection be paravenous, a complication which all your correspondents rightly endeavour to avoid.

3. Since injections into the dilated vein are successful in practice, such contact of solution and endothelium as is necessary must in fact occur.

4. Localised digital pressure after puncture is not sufficient to prevent extravasation. An oblique entry of the needle through sound skin is also necessary. An analogy is suggested from blood transfusion practice, where little bleeding occurs after withdrawing the needle from the donor's vein, provided that an oblique entry was first made.

5. Drs. K. M. and C. J. Cellan-Jones criticise our dose of 15 c.cm. of quinine sclerosing fluid. May we point out that this figure, like that of 5 c.cm. for a single injection, represents the maximum, just as 0·5 c.cm. is the minimum. We agree that in practice the operator must feel his way, and when dealing with a patient of unknown susceptibility he must commence with one or two injections of 1 c.cm., which are later increased in the light of experience.

We believe it to be in general true that the extent of thrombosis varies directly with the amount of fluid injected, although exceptions to the rule not uncommonly occur.

We are, Sir, yours faithfully,

RODNEY MAINGOT.
C. HOPE CARLTON.

May 8th, 1928.

INJECTION FOR INTERNAL HÆMORRHOIDS.

To the Editor of THE LANCET.

SIR,—In an article dealing with this subject in your issue of March 17th Mr. A. S. Morley referred appreciatively to the work of Dr. C. E. Blanchard, the eminent proctologist of Youngstown, Ohio. It may interest your readers to know that Dr. Blanchard is visiting London early in July, and will be prepared to demonstrate his technique during his short stay here.

I am, Sir, yours faithfully,

FRANK COLLIE.

Inverness Mansions, W., May 9th, 1928.

EAST END MATERNITY HOSPITAL.—The annual report records that this hospital maintains its "wonderful record of low maternal mortality," only one death having occurred among 2061 patients.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

THE National Health Insurance Bill was further considered by Standing Committee C of the House of Commons on May 1st, Sir R. SANDERS in the chair.

Clause 6: Separate Valuation.

The Committee resumed consideration of an amendment to Clause 6, moved by Mr. JOHNSTON, providing that where a society without branches had been approved for more than one national area a separate valuation might be made in respect of each national area.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) said that this was a very difficult and technical matter and one with regard to which he thought the Committee would be well advised to take the advice of experts who had given a good deal of consideration to it. Clause 6 gave effect to the advice of the Royal Commission and if they began to encourage a separate valuation they would have all the difficulties of transfer of a member from one country to another. The cost of separate valuations would be very great indeed.

Insurance Benefits in Northern Ireland.

Mr. JOHNSTON said that whereas the Royal Commission's Report was dated 1926, the figures on which he had based his amendment related to 1927. In Northern Ireland to-day the doctors were paid 2*s*. 6*d*. for every certificate. To that extent there was an inducement to find ways and means of continuing this system of perpetual ill-health and disablement in Northern Ireland, whereas in England, Scotland, and Wales the doctors were paid on the basis of a capitation grant. The results were amazing. No one would argue that the real ill-health and disablement in Northern Ireland were three times worse than in England, Scotland, and Wales, and yet the figures for 1927 gave some most astounding results. Take the Prudential Society's figures. For men the sickness benefit averaged in England 16*s*. 11*d*. per member per annum, in Scotland 15*s*. 7*d*., and in Northern Ireland 31*s* 6*d*. In regard to disablement benefit the figures for men in England were 8*s*. 9*d*. and in Scotland 9*s*., but in Northern Ireland the amount was 16*s*. 11*d*. The disablement benefit for women in England cost 9*s*. 8*d*., in Scotland 8*s*. 1*d*., and in Northern Ireland 22*s*. 8*d*. per member. These figures of the Prudential Society were borne out by those of the National Amalgamated Approved Society, the Liverpool Victoria Friendly Society, the Royal Liver Friendly Society, the Royal Coöperative Society, and the City of Glasgow Friendly Society.

Mr. CHAMBERLAIN (Minister of Health): There is no dispute about the figures.

Mr. JOHNSTON said he was glad to hear that, but what was to be done about it. He would be prepared to have words inserted providing that if the Minister was satisfied that there should be a separate valuation such a valuation should be granted. The Committee ought to take the present opportunity of speeding up greater efficiency in the health administration and medical service of Northern Ireland. Otherwise they would have members in Northern Ireland abstracting two or three times more from the funds of the approved societies than members in the rest of the country.

Dr. VERNON DAVIES: Will the hon. Member explain to the Committee whether he has formed any opinion as to why the figures are higher in Northern Ireland?

Mr. JOHNSTON said that his information was that one of the reasons was the different method by which the doctors in Northern Ireland approached the question. Certain test examinations had taken place when doctors had been specially deputed to make examinations of some of these repeated beneficiaries in Northern Ireland, and it had been discovered that the people concerned ought not to be beneficiaries, and would not continue to be so if they had been medically tested by the same standards by which approved persons were tested in England, Scotland, and Wales.

Colonel SINCLAIR, who said he was the only member of the Committee from Northern Ireland, said that the amendment would practically compel Northern Ireland at the present time to establish an health insurance scheme of a nature similar to that which existed in Great Britain. That would be an extremely complicated business, because the dispensary system which had existed in Northern Ireland for several generations would require to be remodelled in some way to bring it into harmony with the establishment of medical benefits in England and Scotland. The Minister for Home Affairs in Northern Ireland appointed a Commission to look into the affairs of poor-law administration in Northern Ireland, and a valuable report was furnished to the Governor of Northern Ireland at the end of last year. The Cabinet had not had time to consider and draft a scheme of reform of local government services of which the dispensary system would form an integral part. He would be sorry if the adoption of this amendment more or less stampeded the Government of Northern Ireland into hasty legislation, which would again have to be remodelled when the larger question of local government services came to be considered as a whole. He freely admitted that the figures submitted by Mr. Johnston were disquieting. There was need for an endeavour to improve matters so that this startling disparity might not recur. The Minister of Labour in Northern Ireland acted for the Ministry of Health and he had adopted a medical referee system of which the health services were availing themselves freely. The certification system in Northern Ireland left something to be desired, but the medical referee system now in force would soon help to correct any alleged irregularities of certification, and he had no doubt that when the next audit was reached a very substantial difference would be recorded in the amount chargeable per person on the Insurance Fund. Northern Ireland was far too small an area to support a National Health Insurance system of its own. The difficulty was that in Northern Ireland certification only was asked from the doctor; he was not required to give treatment. Therefore it was not easy to compare the system which prevailed in Northern Ireland with that of Great Britain. The dispensary system in Northern Ireland suited admirably the large agricultural areas and was not so much availed of in the industrial areas.

Mr. RHYS DAVIES asked the Minister of Health whether it would be possible to negotiate with the Government of Northern Ireland to put the administration of medical benefit on the same footing as it was in England, Scotland and Wales; and further, whether it was possible for a society to make a branch of the Northern Ireland members without the provision mentioned in Mr. Johnston's amendment.

Mr. CHAMBERLAIN said with regard to the second part of Mr. Rhys Davies's question he thought there was such a power under Section 39 of the National Health Insurance Act 1924. As to the figures quoted by Mr. Johnston, the Committee must not only consider the proportion of the figures; they must consider the total amounts in question. He (Mr. Chamberlain) thought that the reason why no action had been taken already in this matter was that it was comparatively trivial. The Prudential Society, for example, had a membership of 1,500,000, but had only about 30,000 members in Northern Ireland. There were local difficulties in Northern Ireland which would make it almost impossible for them to make the change suggested at the moment, although he did not despair of seeing it done in the future. In view of this explanation he hoped the amendment would be withdrawn.

Mr. BROAD said he hoped that the Committee would have some clearer indication than had been given that before this Bill became an Act of Parliament the Minister of Health intended to introduce such an amendment as would deal effectively with this matter and put an end to these abuses. He thought the people of Northern Ireland and those responsible as well as the medical profession ought to feel ashamed of themselves and ought to make their own propositions.

Dr. VERNON DAVIES said he did not think the Committee quite appreciated the peculiar psychology of the Irish people. He had never met any people who were more afraid of sickness or pain. It was quite possible that people in Northern Ireland went to a doctor far oftener than people in England. The doctors might be acting quite fairly, but in any case they would get a higher number of claims from Irish people than from the English, Scottish, or Welsh.

Mr. MELLER said he would like to accentuate the view which had been expressed regarding the inadequacy of the arrangements in Northern Ireland through the absence of medical benefit. The system of certification in Northern Ireland was an incentive to people to get certificates. There was no medical service in the strict sense of the term. What he understood to be the real difficulty in Northern Ireland was that the people had no desire to get bottles of medicine, but they desired to have cash, and so long as that was obtainable there was not the slightest desire on the part to recover, nor did he think perhaps, having regard to some of the medical men he had come across in Northern Ireland, that their medicines would often shorten an illness. He hoped that discussion would bring home to the Government of Northern Ireland that something had got to be done.

The amendment was negatived by 26 votes to 12.

The Committee adjourned.

The Bill was further considered in Standing Committee on May 3rd, Sir R. SANDERS in the chair.

Clause 14: Surplus Funds of Approved Societies.

On Clause 14, which deals with the disposal of surplus nds of approved societies, and lays it down that any heme may provide for allocating out of the disposable rplus sums for donations of an eleemosynary character hospitals and similar charitable institutions.

Sir T. DAVIES moved to include the words "or for the pport of district nurses." He said he thought everyone uld agree that the additional benefit which this endment would give would be valued all over the country.

Mr. RHYS DAVIES said there would be strong opposition the money of the approved societies being used for the rpose suggested. He could not understand hon. Members the Conservative side of the Committee. They supported e Chancellor of the Exchequer in reducing the State ant under the Economy Act and they now came to at Committee and sought to insert amendments with e object of spending money which could not be found thin the scheme at all. If they were to provide nursing eatment they would have to do it with money that ought go direct into the pockets of the insured person.

Mr. CHAMBERLAIN said that Mr. Rhys Davies's remarks out the Economy Act were entirely irrelevant. The vernment were under the impression that the words similar charitable institutions" would cover nursing sociations, but as some doubt had been raised about it saw no reason why he should not accept the amendment.

Dr. VERNON DAVIES said he was not quite sure whether n. Members understood the distinction between district rses and nurses. District nurses visited patients once or ice a day only. They were very often run as charitable stitutions supported by the public, and he saw no reason y approved societies should not be allowed to contribute little towards their funds. All insured persons had a im on the services of these nurses, whether they paid ything or not; they simply went on the recommendation of e doctor, and it was quite right that they should do so. The amendment was agreed to.

X Ray Examinations in Cases of Fracture.

Dr. WATTS moved an amendment to provide for X ray aminations in cases of fracture, or suspected fracture. e said that the amendment was moved both in the interests the insured person and for the protection of the panel ctor. In recent years it had become absolutely necessary almost every case of fracture to have an X ray photograph. several cases before the courts recently it had been held at failure on the part of a doctor to get an X ray otograph rendered him liable for an action for damages the event of anything going wrong with the fracture. panel doctor had no means of getting an X ray photograph less he paid for it out of his own pocket, and with the all remuneration which he got under the Act that would a hardship. There was a good deal of feeling among rious insurance committees in different parts of the untry about the necessity for this additional benefit, d he had been asked by the Cheshire Insurance Committee ongst others to bring the question forward. The cost uld be trifling.

Sir KINGSLEY WOOD said he was sure that the Committee d every sympathy with the object which Dr. Watts had view, and anything that could be done to secure proper amination in such cases as those which had been entioned would be done provided that the finances of the cieties permitted it. He was afraid, however, that this endment could not appropriately be inserted in this rticular clause, which simply gave an opportunity for cieties within their disposable surplus to make occasional bscriptions to hospitals or other charitable institutions. cieties could make an additional gift to institutions aking a specialty of X ray treatment, but phraseology of e kind suggested in the amendment could not be put in is part of the Bill.

Dr. VERNON DAVIES: I understand that insured patients e entitled to the best medical attendance, and that that is e of their rights under the Act.

Sir KINGSLEY WOOD: They are entitled to the attendance entioned in the Act.

Dr. VERNON DAVIES said that insured persons were titled to anything which came within the competence of ordinary medical practitioner. If a doctor did not make X ray examination he might miss the fracture altogether. a doctor was not certain, how could he give the best illed attention?

Sir KINGSLEY WOOD said that if the Committee desired discuss whether this matter came within the scope of e ordinary medical practitioner or not they must deal th that point in another part of the Bill.

Dr. WATTS said that, having regard to the undertaking ven by the Parliamentary Secretary to the Ministry of alth that this matter should be considered when the mmittee reached the First Schedule, he would withdraw s amendment.

The amendment was by leave withdrawn.

The Administration of Additional Benefits.

Dr. VERNON DAVIES moved an amendment to the effect that "additional benefits shall be administered by the society or branch of which the persons entitled to the benefits are members, except where the benefits are in the nature of medical benefits." He said that this was apparently a simple and harmless proposition, but those who knew anything about the past history of the National Health Insurance Act knew that it was a very controversial subject. He had retired from medical practice and had not the slightest interest one way or the other in the medical profession, so that he could speak for that profession in a more or less unbiased way. Before the National Health Insurance Act of 1911 the friendly societies had formulated a scheme by which their members were enabled to get medical treatment and attendance during sickness by the payment of small subscriptions annually to the committee of the society who in turn appointed a doctor to look after these patients; that was to say, the doctor was appointed by a lay committee at, as a rule, a certain definite contract rate which was about 4*s.* a year. This scheme went on for years and the lay committees formed the idea that it was a perfectly reasonable the proper thing that they should be able to employ or engage medical men. When the national insurance scheme was broached the matter was brought to a head because the medical profession as a whole had formed the opinion that, being members of a learned profession, it was perhaps not conducive either to their dignity or to their position that they should be managed by a committee of lay people, particularly when it came to be a matter of medical treatment or benefit. The approved societies, on the other hand, said: "We have been working a scheme like this for some time; the doctors have been our servants: everything has worked satisfactorily, and we see no reason why under a national insurance scheme we should not be allowed to carry on in the same way." That led to a rather bitter and acrimonious fight, and the result was that the State intervened and made definite regulations by which the medical men were not put under the power or authority of the approved societies. He imagined that the approved societies had not been quite able to get over their disappointment and that there was even now perhaps a slight feeling of irritation, he might even say of veiled antagonism, to the medical profession, and they seemed to have developed the idea that that profession were simply out to protect their own interests irrespective of anything else. In his view the whole health insurance scheme rested upon a tripod of which the three legs were the State, the approved societies, and the medical men. If any of these legs was not functioning properly the whole scheme was imperilled. These three parties should be in coöperation, no one of them superior to the others, but all equal and working for the benefit of the insured person. In that way a sound foundation would be laid on which could be built up a superstructure of national health insurance which would be a benefit not only to the country, but to the insured persons themselves. Before the scheme could be competently worked they would have to come to that position. The medical profession had no desire to be superior. They desired to work with the approved societies, but they most definitely would not work under them. Subsection (5) of Section 75 of the National Health Insurance Act, 1924, was as follows:—

> "Additional benefits shall be administered by the society or branch of which the persons entitled to the benefits are members, except that where the benefits are in the nature of medical benefit, they shall be administered by and through the insurance committee."

He maintained that by that subsection the State recognised that the medical men should not in any circumstances be placed under the supervision or control of the approved societies in connexion with medical benefit. He understood that it was now proposed to delete this subsection, and that the view of the Ministry of Health was that it was either unnecessary or unworkable. That was perhaps an arguable position, but the medical profession said that this was a subsection upon which they had relied in the past to prevent the approved societies from administering benefit which was in the nature of medical benefit, and if it were necessary to put in this provision the fact that it had perhaps not worked, or was not workable, was no reason why it should be deleted if the medical profession had the idea that it was a certain safeguard for them. It would appear now as though the approved societies might be able to re-establish the position as far as regarded additional benefit of a specialist or consultant character which they thought was put an end to by the Act of 1911. It might be said that the power of the Minister to make regulations under Subsection (3) of Clause 14 meant that he would make such regulations as would ensure that the point which he (Dr. Davies) was trying to press home would be adequately safeguarded. They all knew, however, that it was not always advisable to legislate too much by

regulation. The regulations made depended absolutely on the personality of the Minister who happened to be in office.

Sir KINGSLEY WOOD: They have to go before Parliament.

Dr. DAVIES said that was so, but the Minister of Health would put the Government Whips on and get the thing through straight away. The putting of any regulation on the Table of the House was thus more or less a farce.

Sir KINGSLEY WOOD said that whatever political party might happen to be in power, if a case could be made against regulations the procedure of the House offered one of the most effective checks which could be devised.

Dr. DAVIES said he contended that the approved societies would really be put in their old position, except for the safeguard of the regulations of the Minister. The acceptance of his amendment would do the Act no harm, it would do the approved societies no harm, and it would be welcomed by the doctors as putting into the Statute something which they thought they ought to have as a safeguard.

Mr. CHAMBERLAIN said that in his endeavour to avoid the difficulties of Section 75 (5) of the existing Act, Dr. Davies was creating fresh difficulties. Section 75 (5) not only said that where the benefits were in the nature of medical benefits they were excluded from the general rule under which additional benefits were administered by the societies, but it said who was to administer benefit of the nature of medical benefit—namely, the insurance committees.

Mr. HARVEY: That is repealed in the Schedule—Subsection (5).

Mr. CHAMBERLAIN said it was repealed, and Dr. Davies wanted to restore it, but he did not restore it in the form in which it stood. He cut out the part which said how the medical benefits were to be administered in the future. Under the existing Act additional benefits in the nature of medical benefit were to be administered by the insurance committees. The hon. Member knew that that was impossible, and he had cut it out, thus leaving him in a difficulty, because he did not say who was to administer the additional benefits which were in the nature of medical benefit. In the absence of any definite instruction it would be interpreted to mean that whoever did administer them the approved societies must not have any share in the administration. Therefore he could not accept the amendment. He agreed with Dr. Davies when he said he was in favour of coöperation between the medical profession, the societies, and the Ministry of Health. If the matter was left to the Minister to provide by regulation under Clause 14(3) that would be a method by which the benefits would be administered. They would be administered by a joint body on which the medical profession and the approved societies were represented. The regulations would have to receive the tacit approval of Parliament, and he thought Dr. Davies might rely on the general good sense and fairness of Parliament, however it might be constituted in the future, to see that none of the contributing elements in this combination was put under the domination of another.

Mr. HARVEY asked if the Minister would give some assurance that it was not contemplated to make regulations that would denude the insurance committees of all their functions.

Mr. CHAMBERLAIN: No.

Mr. HARVEY: The only idea is to make provision which does not now exist for the administration of ophthalmic and dental benefits perhaps by the provision of clinics, or whatever they might be.

Mr. CHAMBERLAIN: Yes.

Dr. DAVIES said that having made his protest he could not press his amendment against the Minister.

The amendment was, by leave, withdrawn.

MINISTRY OF HEALTH VOTE.

On Tuesday, May 15th, the House of Commons went into Committee of Supply on a vote of £13,774,025 for the salaries and expenses of the Ministry of Health. Mr. J. F. HOPE, Chairman of Committees, was in the chair.

Mr. CHAMBERLAIN, Minister of Health, said the estimates showed an increase of nearly £1,000,000 over those of last year. Dealing with housing, he said that the number of slum clearance schemes submitted by local authorities, small as it was, was nevertheless the largest that had ever been before the Ministry of Health in the whole history of the slum question. The existing anomalies connected with slum areas could only be put right by amending legislation, but even if those anomalies were put right he was afraid that the process of slum clearance would be so complicated, slow, and costly that it would never present any hopeful prospect of that wholesale improvement in slum property which they must have if they were really to fulfil their moral obligations in the matter. If a proportion of the houses in the slums were improved so as to give the tenant decent conditions, there was a prospect, however, of maintaining the slum-dweller and his family in health at a rent which they could afford and in a locality where the worker could remain near to his work.

Cancer Research.

A great deal of research had been carried on in rega to cancer which was perhaps the largest single cause mortality. That research had dealt with the causes a treatment of cancer both in this country and abroad. Th had not yet been able to put their finger upon any fact, series of facts, which would allow them to say that they h solved the problem of cancer, very far from it, but all t time they were encroaching upon the field of the unknow all the time they were advancing their knowledge. T Ministry of Health had mapped out a sort of scienti survey of what could be done to-day in the effective trea ment of cancer, taking each part of the body in turn, wi the present state of skill and knowledge, and they h followed that up with a careful and exhaustive inquiry in a large number of cases of cancer and the results of th inquiry had been examined by a Departmental Committ set up at the Ministry of Health about five years ago. Th had also done something to bring into prominence certa methods of treatment which they had ascertained fro information derived from at home and abroad had prov particularly effective in the treatment of cancer. The were methods of radiology—the use of radium itself a so-called X ray therapy. These methods were costly a were not easily adopted by all authorities, but they believ that by proper organisation more effective use could made of the equipment which they actually possesse They were keeping in the closest touch with a great numb of other agencies—the British Empire Cancer Campaig the public health authorities throughout the country, a the local cancer committees working in some of the gre provincial centres. While they could not say that th were even in sight of a cure or of a method of prevention cancer, nevertheless they were on the right path, and o day—no one could say when—they might actually tu the corner and find themselves in the presence of the g which they sought. (Cheers.)

Encephalitis Lethargica.

Encephalitis lethargica was a disease in regard to whi central action was particularly necessary if they were make progress because this disease was fortunately n sufficiently common yet for any hospitals or any priva practitioners to have seen very many cases of it. Duri the past ten years there had been about 1500 cases a ye in this country. The Ministry had instituted an exhausti inquiry into about 3000 cases of sleepy sickness. It h been carried out by Dr. Parsons, one of the officers of t Ministry of Health and the results of the inquiry show that only about 25 per cent. of the cases recovered; abo 35 per cent. died, and the remaining 40 per cent. were mo or less disabled mentally or physically. The valua part of this inquiry was that for the first time they kn what were the proportions of the persons attacked by t disease who recovered, died, or were permanently injur They knew the different forms of injury which suffer from encephalitis lethargica might sustain; they knew h those things proceeded, and they had got for the first ti some inkling of what were the best ways of treating t disease. The inquiry came very opportunely after t passing of the Mental Deficiency Act, because in the lig of the inquiry they might hope that that Act might be p to more effective use. The inquiry disclosed a considera variety of cases, and it must be understood that the tre ment which might be effective and desirable for one c might be quite wrong for another. The Mental Deficie Act would enable them to classify cases and treat th in the best manner. He thought that the popular impress that encephalitis lethargica was tending to decrease v correct, but of course sufficient remained to make it a v serious problem because the effects of the disease w frequently permanent, and a person once affected remai a charge upon the community, perhaps for the rest of life.

Rheumatic Diseases.

There were really two distinct groups of diseases wh come under the heading of rheumatism—acute rheuma fever which so often attacked children and which v frequently associated with heart disease; and chro rheumatism of the joints and muscles which frequen disabled industrial workers. Last year approved socie spent on sickness benefit and medical benefit for rheuma insured persons £5,000,000, and in the same year 5,250,0 weeks' work were lost owing to the incidence of rheumat among insured persons. They calculated that rheumat accounted for one-sixth of the whole industrial invalid of the country.

With regard to rheumatism, he was told that the treatm which afforded the best hope was one of prolonged rest institutions, and the Ministry of Health during the p two or three years had tried to encourage the provision hospital accommodation set apart specially for this purp To-day, for the first time, they had actually got from

500 beds specially ear-marked for the treatment of acute eumatism. As regarded chronic rheumatism, the first thing quired there was advice, because the causes of rheumatism re many and various, and it might, and very frequently d, spring from some local centre of infection. It might the teeth that were wrong, or the tonsils, or the intestinal act. He had heard, only in the last 24 hours, of a gentlean who read an account of the papers that were read at conference held last week in Bath on the subject of eumatism. Reading about these focal centres of infecity, it suddenly occurred to him that possibly there might some connexion between the rheumatic pains from which had suffered for years and the sore-throat which had en a constant trouble to him for the same period. He nt to see his doctor, who told him he had got septic nsils, and that that was the cause of his rheumatism. That s only an illustration of how, in the absence of advice, ople accepted rheumatism as though it were a sort of t of God, which could not be prevented and for which thing could be done; yet, under the advice of the specialist, might be traced to some quite easily removable cause, d the suffering might be almost instantaneously relieved. course, a great deal was being done. In the case of the ildren, there was the school dental service, which employed mething like 600 dentists and was treating about 1,000,000 ildren a year. In the case of the elder insured persons, ere was the dental benefit to which approved societies re now devoting some £3,000,000 a year, with a result ich he hoped would show itself in a lessened demand on the funds in the future from rheumatism, and consent incapacity to work. At present, approved societies re paying about £250,000 a year to two hospitals for the eatment of their patients, and a further £200,000 a year s being devoted to convalescent homes in connexion th which, in some cases, there was now being developed a treatment. But they felt that something more than is was required, and that there were forms of treatment, pecially those connected with radiant heat and light, ich had shown very promising results experimentally, and ich the Ministry desired to see extended for the benefit a larger part of the population. The Red Cross Society s now trying to organise the setting-up of an experimental nic of this kind in London, and as soon as that was ready proposed, by regulation, to authorise approved societies make a contribution to that clinic and to obtain treatment their members there. The committee would realise at the full development of a preventive and curative stem in connexion with rheumatism must mean the penditure of very large sums of money. It might be it in the present financial state of the country it was not ssible to carry on that development as rapidly as they uld wish, but, at any rate, they were at last beginning realise the nature of the disease with which they had cope and to realise the extent to which it was crippling people. As that knowledge became more widespread, thought they would see a willingness to devote to the provement of those conditions whatever money might found necessary.

Maternal Mortality.

The Ministry of Health had now been established for ie years, and one might fairly say that as far as one uld measure the progress of the public health by the neral vital statistics, the record of the Ministry was not satisfactory. The general death-rate in those years had ne down from 14 per 1000 to 12·3, and the infant mortality- e had dropped from 89 to 70 per 1000. But there was e figure which showed no improvement, although it ncerned a very vital subject. That was the figure of ternal mortality. It was a terrible thing to think that day, out of every 250 mothers, one died in childbirth, l that that state of things had persisted for the last 20 rs. That was not really the full measure of the injury at was being done. One must not only remember what ppened to the family when the mother was taken away, t one must think of those other mothers who might not , but who emerged from their confinement permanently ured in their health, their nervous system perhaps ttered, and unable really to fulfil the full duties of mother- od. He felt that the time had come when a great new ort ought to be made—(cheers)—to bring down those res of maternal mortality and to improve the health of se mothers. There were many things they did not w yet about the causes of maternal mortality, but they know something. They knew that these figures per- ed steadily throughout the country, but, nevertheless, y were not universal. There were places where they ld find much lower figures. They would be found in se cases where there was the most careful antenatal l postnatal supervision, and where the people themselves l the greatest opportunities of learning what was necessary preserve their health and the lives of their infants. The nistry of Health was taking up this question very seriously. blic attention has been largely directed to it through the blication of a report on the protection of motherhood drawn up by Dame Janet Campbell, a very distinguished officer of his Department. He was now endeavouring to institute a new inquiry into the causes of maternal mortality. He was trying to enlist in that service the general practitioners throughout the country, as well as the local authorities; and the British Medical Association had assured him that they were deeply interested in the question, and would use all their influence with their members to get them to give every assistance possible to his inquiry. Under this scheme, local medical officers of health would make an inquiry into every case of maternal mortality which occurred, wherever it might be, throughout the country. They would make this inquiry on lines which would be laid down by a committee at the Ministry of Health, on the lines of the Cancer Committee. Their returns would come in quarterly to that Committee, the information would be classified, and the Committee would draw what conclusions they found it possible to draw from the information obtained. All that information would then go back again to the local authorities, and would be made known to those responsible for the conduct of the infant welfare centres and the maternity hospitals. He was also setting up a committee to inquire into the whole position of midwives; into their status, training, and remuneration. After all, the success or failure of any efforts they made to improve the conditions of childbirth in the country must largely depend on the midwives, on whom a great responsibility rested. Midwifery was a hard and arduous profession; it was not a well-paid profession; and if they were to get the class of women they wanted to enter that profession—educated, humane, sympathetic, earnest, enthusiastic—they must make the conditions of the profession such as would attract the right class of people. Once again he must warn the Committee that all these efforts would cost money. Money would be needed to provide more accommodation, and for making conditions better for the people who were carrying on the health services, if they were really to make progress. If they could indicate with any confidence to the people of this country what were the precautions necessary to take if they were to remove this menace from their midst he could not believe that the national conscience would allow the lives of mothers to be sacrificed merely for the sake of a few extra thousands of pounds. (Cheers.)

An amendment to reduce the vote by £100, moved by Mr. GROVES, was rejected by 209 votes to 99—majority 110.

CHIROPODISTS (REGISTRATION) BILL.

The text of the Chiropodists (Registration) Bill, which has been introduced in the House of Lords by Viscount NOVAR, has now been published. The Bill sets up a Board to be known as the British Chiropody Board, who will be charged with admitting chiropodists to the Register to be kept under the Act, Subsection (4) of Clause 5 (which describes the persons who are entitled to be registered) provides that nothing in the section shall operate to prevent the practice of chiropody by a registered medical practitioner.

HOUSE OF COMMONS.

THURSDAY, MAY 10TH.

Government Subsidy and Housing Construction.

Dr. SALTER asked the Minister of Health whether he was aware that, following the reduction in the subsidy, there had been a marked falling off in the number of houses under construction or authorised under the 1923 and 1924 Acts; and whether, with a view to stimulating local authorities to undertake wide schemes of building for letting, he would give an early assurance that the present rates of Exchequer assistance would be available for all houses completed by Sept. 30th, 1929.—Mr. CHAMBERLAIN replied: I am aware that as compared with the abnormally high rate of house construction just before the reduction of the subsidy became operative, the subsequent statistics showed a falling-off in the rate of house-building. The latest figures indicate that the rate is now increasing again. With regard to the last part of the question, although I cannot, of course, anticipate what the result will be of the statutory review of the subsidy at present payable, which must be undertaken after Oct. 1st next, I have in the meantime decided that houses completed by March 31st, 1929, shall, if otherwise elegible, qualify for subsidy at the existing rates.

London Schools for Mentally Defective Children.

Mr. ROBERT MORRISON asked the President of the Board of Education (1) the number of London special schools for mentally defective children closed during the past five years, and (2) the number of mentally defective children at present on the roll of London special schools, and the corresponding number for 1918.—Lord E. PERCY replied: Since April 1st, 1923, 18 London special schools for mentally defective children, providing 1332 places, have been closed. The number of children on the rolls of special schools for mentally defective children has fallen from 6994 on March 31st,

1924, to 5594 on March 31st, 1928. The corresponding figure on March 31st, 1918, was 7004. I may add that the standard of ascertainment of mentally defective children in public elementary schools in London has remained practically constant for several years, and the number of children so ascertained has fallen from 12·64 per 1000 in 1923 to 11·22 per 1000 in 1927.

Publication of New Medical Discoveries.

Sir BASIL PETO asked the Minister of Health whether the General Medical Council or the Medical Research Council were concerned with the investigation of new discoveries in connexion with, and new treatments of, disease; if not, whether there was any body of medical men in this country whose business it was to make such investigation officially; and, if not, how his department was kept advised of such new discoveries and treatments.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the negative as regards the General Medical Council, and in the affirmative as regards the Medical Research Council. The recognised method of bringing a new discovery to notice is publication of the scientific evidence for it in a technical journal. This allows its value to science or practice to be confirmed or otherwise by other workers.

Sir BASIL PETO: As the public generally do not read the technical medical papers, can the right hon. gentleman say in what way the public can be informed in view of the action which is taken by the General Medical Council in the case of any member of the profession who advises the public of a new treatment by any communication in the public press?

Viscountess ASTOR: Is it not the view of the right hon. gentleman that the less the public know, read, and think about disease the freer they will be from it?

Mr. CHAMBERLAIN: I cannot admit that it is not desirable that alleged new medical discoveries should be submitted to technical examination, and I do not think that it is possible for the Medical Research Council to take any useful action unless they have the benefit of some such publication as I have suggested.

A County Medical Officer's Appointment.

Mr. WILLIAM M. ADAMSON asked the Minister of Health what conditions had been laid down by his department in connexion with the appointment of the county medical officer for Salop; and, seeing that the Salop County Council now disputed the terms proposed, what action he proposed to take to bring about a settlement.—Mr. CHAMBERLAIN replied: No special conditions have been laid down by my department in connexion with this appointment, but I have suggested to the County Council that in making the appointment they should have regard to the standard salaries for such appointments which have been commended by my department for the guidance of local authorities. As regards the last part of the question, I am informed that the County Council have deferred consideration of the matter for the present.

MONDAY, MAY 14TH.

Administration of the Sale of Food and Drugs Acts.

Dr. VERNON DAVIES asked the Minister of Health if the Sale of Food and Drugs Act was administered by the health authorities in any county, and, if so, in how many.—Sir KINGSLEY WOOD replied: Yes, Sir. In some counties the public health committee or the medical officer of health, or both, take part in the administration of the Sale of Food and Drugs Acts. I regret that I cannot state the number of such counties.

Leprosy in Palestine.

Sir ROBERT THOMAS asked the Secretary of State for the Colonies the number of lepers in Palestine; whether they were segregated in hospitals or homes; and what other provision existed for their care and treatment.—Mr. AMERY replied: In February, 1926, it was estimated that there were less than 80 lepers in Palestine. I am not in possession of more recent figures, but the High Commissioner then informed me that the disease appeared to be dying out naturally. In 1927, the Moravian Leper Hospital at Jerusalem had on the average 29 in-patients, and 24 lepers received out-patient treatment at Government dispensaries. The High Commissioner is satisfied that sufficient facilities exist in Palestine for the treatment of leprosy.

QUEEN MARY'S HOSPITAL FOR THE EAST END.—Last week the Queen opened the Dr. Nicoll Memorial Wing of this hospital at Stratford. The additions, which comprise a solarium for sunlight treatment, large children's ward, two additional wards for men and women, an enlarged X ray department, and new administrative quarters, are in memory of the late Dr. P. Nicoll who worked earnestly and devotedly in the interests of the institution for 30 years. The Queen unveiled a tablet over a bed endowed to his memory.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A an ordinary meeting of the Council on May 10th Sir Berkele Moynihan, the President, in the chair, diplomas of Membe were conferred upon 152 candidates. Their names ar included in the list of licentiates of the Royal College Physicians, which appeared in our issue of May 5th, with th exception of A. W. D. Cooke, S. McGladdery, H. H. Mahmoo J. W. Notley, and J. M. Oldaker, who have already receive the diploma of M.R.C.S., and Ralph Henry Morley, Leec University, whose Membership was conferred at this meetin but who will not receive his licence until a later date.

The undermentioned diploma was conferred (joint with the Royal College of Physicians) upon the followir candidates:—

DIPLOMA IN PUBLIC HEALTH.

J. S. Anand, H. S. Bawa, J. D. Bilimoria, J. C. Blake, M. Bur L. Fay, M. M. Khan, J. M. Mackay, Elsie J. Mann, W. Masters, C. M. Nicol, G. H. Pringle, Winifred E. Probe W. E. Snell, N. H. Tadiwala, F. F. Udvadia, Madeline H. Umpleby, and Margaret Ward.

UNIVERSITY OF LONDON.—The report of Mr. Franklin Sibly, D.Sc., the principal officer, on the work the University during the year 1927–28, has been issue The total admissions by all channels during 1927– amounted to 9119, as compared with 7668 in 1926. T total number of candidates for all examinations was 33,9(as against 33,220 last year. It is interesting to note th matriculation and registration candidates numbered nea 600 more than last year, while candidates for first a higher degrees were fewer. Benefactions specially affecti the medical faculty include generous contributions from t Rockefeller Foundation, while Messrs. A. Wander, Lt the Imperial Chemical Industries, Ltd., and Messrs. Lyons and Co., Ltd., have helped towards the endowme of a Chair of Dietetics, to be attached for the present St. Thomas's Hospital Medical School. The Trust De establishing the Geoffrey E. Duveen Lectureship in Otolo is being varied to allow of the establishment of a Travelli Post-graduate Studentship in Oto-Rhino-Laryngology a of a fund for the promotion of research in that subje The principal officer records changes in personnel of teach and the institution of various new chairs and readershi He mentions that the Holiday Course for Foreigners, t twentieth of the series, held at King's College for Wom Household and Social Science Department achieved great success. The number of applications showed marked increase on the previous year, over 550 havi to be refused. He concludes by an allusion to the f that the University has now the land on which to build house and that its duty and privilege will be to order th house so that it becomes to future generations their ho

Middlesex Hospital (University of London).—A cou of three lectures on Graves's Disease, with lantern illust tions, will be given at the Middlesex Hospital Medi School, Cleveland-street, W., at 5.30 P.M., on Tuesd Wednesday, and Thursday, May 29th, 30th, and 31st, Dr. John Eason, physician to the Edinburgh Ro Infirmary.

LONDON INTER-COLLEGIATE SCHOLARSHIPS BOAR *Medical Scholarships.*—Six medical scholarships and ex bitions, of an aggregate total value of £513, tenable University College Hospital Medical School, the Lon (Royal Free Hospital) School of Medicine for Women, the London Hospital Medical College, will be offered competition at the examination commencing on June 2 Full particulars and entry forms may be obtained from Secretary of the Board, Mr. S. C. Ranner, M.A., The Med School, King's College Hospital, Denmark Hill, Lond S.E. 5.

LEBANON HOSPITAL FOR MENTAL DISEASES.—T twenty-ninth annual meeting of this hospital in Syria take place at Friends House, Euston-road (opposite Eus Station), on Tuesday, May 22nd, at 3 P.M., Sir Wyndh Deedes, late Chief Secretary to the Palestine Governm in the chair. An address will be given by Sir Maurice C on the Treatment of Early Mental Disorder, and the ot speakers will include Sir Robert Armstrong-Jones Dr. Bedford Pierce. The Lebanon Hospital is the place for the treatment of mental disorders in Syria, an also a teaching centre for psychiatry in the Near East. I administered on an international and undenominati basis, under a British medical director. All who are intere are invited to attend this meeting, and further particulars obtainable from the London office, 139, Marylebone-road.

UNIVERSITY OF NOTTINGHAM.—The buildings of this new university will be opened by the King and Queen on July 10th.

THE Minister of Health has appointed Mr. A. B. Maclachlan to be a Principal Assistant Secretary and Mr. M. Heseltine, C.B., to be an Assistant Secretary of the Ministry.

THE X ray department in the new extension of the Mildmay Mission Hospital, Austin-street, Bethnal Green, will be opened by Sir Percy Shepherd to-day, Saturday, May 19th, at 3 P.M.

MINERS' ACCIDENT RATE.—The annual report of the Lancashire and Cheshire Miners' Permanent Relief Society shows that approximately one in every six of the 56,354 members was injured last year.

Dr. George H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge, has recently been elected Foreign Corresponding Member of the Academy of Medicine, Paris.

MEDICAL AND DENTAL DEFENCE UNION OF SCOTLAND.—At a recent meeting of the Council of the Union, Messrs. Millar, Thomson, and Dunlop, C.A. (113, St. Vincent-street, Glasgow, C. 2), were appointed secretaries and treasurers, and Messrs. Brown, Mair, Gemmill, and Hislop (162, St. Vincent-street, Glasgow, C. 2) law agents to the Union.

SUNSHINE IN MANCHESTER.—It is reported that the average number of hours of sunshine in Manchester during the last six years was less than 900, whereas at Southport, in the same latitude, the figure was between 1400 and 1500. At Southport this figure has remained approximately constant for 20 years, but Manchester's sunshine has diminished in the same period from 1149 to 859 hours per annum.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION. Arrangements have been made for post-graduate teaching in Glasgow from June to October, under the auspices of the above association. There will be a general medical and surgical course, special clinical courses, and clinical assistantships will be available. Copies of the syllabus for the summer session may be had from the secretary of the association, at the University, Glasgow.

A COMMITTEE appointed by the Royal Medico-Psychological Association is engaged in compiling a memorial volume to the late Sir Frederick Mott. It is hoped that it may be ready in the early autumn. The title suggested is "Contributions to Psychiatry, Neurology, and Sociology. Dedicated to Sir Frederick Mott by His Colleagues, Friends, and Former Pupils." The publication has been entrusted to Messrs. H. K. Lewis and Co., Ltd.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION.—This association has arranged a series of lectures demonstrations at St. James's Hospital, Ouseley-road, Balham, S.W. The name of the lecturer and the subject will be given each week in our Medical Diary. On Tuesday, June 12th, a visit will be paid to King Edward's Sanatorium, Midhurst, and on Wednesday, June 27th, a demonstration will be given at the Cassel Hospital for Functional Nervous Disorders, Penshurst. The Secretary is Dr. R. J. Saunders, 9, Lyford-road, Wandsworth Common, S.W. 18.

NATIONAL UNION OF SOCIETIES FOR EQUAL CITIZENSHIP.—A conference on Women in the Service of Hospitals was convened in London by the Union on May 8th and was attended by representatives of a large number of organisations. The need for adequate facilities for the training of women medical students was discussed by Dr. Graham Little, M.P., who moved a resolution protesting against the exclusion of women medical students from all the London general hospitals having training schools—with the exception of the Royal Free Hospital and a limited number of students at the University College Hospital—and calling upon the Union to organise a representative committee which could make representations on this subject to the hospitals and public bodies concerned. Miss Eleanor Rathbone, President of the Union, pointed out that the hospitals are supported by subscriptions from women as well as men. The particular need for qualified medical women in mental hospitals was argued by Dr. Isabel Wilson, and Dr. Margaret Emslie, in moving a resolution calling upon those responsible for the administration of hospitals to ensure the appointment of women both on the committees of management and to medical staff posts, referred to the special qualifications which trained medical women can bring to maternity and child welfare work.

UNIVERSITY OF GLASGOW.—On June 20th the honorary degree of Doctor of Laws will be conferred on Prof. G. W. Crile, of Cleveland, Ohio, and on Madame Curie, of Paris.

Dr. K. St. Vincent Welch, of Sydney, has been appointed as first doctor under the Australian Inland Mission's Aerial Medical Service.

ROYAL SOCIETY OF MEDICINE.—The Society's house and library will be closed on Saturday, May 26th, and Monday, May 28th.

BOLINGBROKE HOSPITAL, WANDSWORTH.—According to the annual report the average cost of an in-patient has fallen from £7 13*s.* 3*d.* to £7 6*s.* 5*d.*

EAST SUSSEX COUNTY COUNCIL.—Dr. A. G. R. Foulerton, who is shortly retiring from the position of county medical officer of health for East Sussex, was on May 8th appointed hon. consulting medical officer to the county council.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—Examinations for the certificate in psychological medicine and for the Gaskell prize will be held at the Maudsley Hospital, Denmark Hill, London, S.E., on May 31st and June 1st. Particulars will be found in our advertisement columns.

A GIFT TO NEWCASTLE-UPON-TYNE INFIRMARY.—Sir Walter Runciman has promised to give £50,000 towards the cost of enlarging this hospital, which has a waiting-list of 2000. The extensions will cost £150,000. The buildings have been twice enlarged since 1906 and there are at present 534 beds, but these are still inadequate to the demands of a huge population.

ROYAL BERKSHIRE HOSPITAL.—Mr. J. H. Benyon, Lord Lieutenant of Berkshire, recently opened at this Reading institution new operating theatres, made necessary by the great increase in the number of operations; these have nearly quadrupled in the last 20 years. There are two theatres in a detached block connected with the main building by a covered way. Instead of the familiar plate-glass north windows they are lighted by large roof lights.

DONATIONS AND BEQUESTS.—Major Walter E. Elliot, M.P., Under Secretary of State for Scotland, on May 8th, on laying the foundation-stone of the reconstructed and enlarged Northern Infirmary at Inverness, the cost of which will be over £100,000, announced the gift to the infirmary of the sporting estate of Kintail, valued at £50,000, the benefaction of Mr. Alexander Edward, of Forres. The reconstruction is to cost £100,000, of which £74,000 has already been voluntarily subscribed.—At the recent meeting of the Glasgow University Court it was intimated that Mr. William C. Teacher, of Cove, Dumbartonshire, had made a gift of £10,000 for the foundation of a lectureship in bacteriology at Glasgow Royal Infirmary.—Sir Edward Holt, Bart., of Manchester, among other bequests, left £5000 to the Manchester Northern Hospital in memory of his son, Captain Joseph Holt, who was killed in Gallipoli, £1000 each to the Manchester Royal Infirmary, the Salford Royal Hospital, St. Mary's Hospital and Dispensary for Women and Children, Harpurley District Nursing Association, £5000 to the Manchester Radium Institute, and £1000 to the Humphrey Chetham Hospital and Library in Manchester.

ROYAL WEST SUSSEX HOSPITAL.—At the recent annual meeting the governors submitted a recommendation that out-patient letters be discontinued, and the statute amended accordingly. In support of this it was stated that these letters had been abolished at hospitals all over the country, and in some places in-patient letters as well. Against the proposal it was argued that some people would take a far greater interest in the hospital because of the letters. The governors decided that out-patients' letters be only issued on application to the secretary. It was stated that the contributory scheme was increasing in membership at the rate of about 400 a month, and that the actual membership at the moment was 12,400, covering about 25,000 people. It was hoped that the ultimate total would be 20,000 actual members, which would produce at least £6000 a year, 90 per cent. of which would go to the hospital. The year's finances (to March 31st) showed, despite the exercise of every economy, a deficit of nearly £2000, which the governors liquidated by a decision to sell out investments or transfer from the trustees' accounts. The sum of £12,800 has so far been subscribed to the centenary fund.

ENLARGEMENT OF SWINDON HOSPITAL.—It is proposed to enlarge the Swindon and North Wilts Victoria Hospital at a cost of £33,000. A contributory scheme to help the maintenance fund is about to be launched.

VICTORIA PARK HOSPITAL.—The new block of the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E., will be opened shortly by the Duke of Connaught, the President. It will provide especially for surgical and radiological needs. The governors are anxious to reopen the sanatorium at Saunderton, Bucks, which has been closed for two years for lack of means to maintain it.

YORK COUNTY HOSPITAL.—An extension of the eye, ear, nose and throat departments of this institution has just been opened. The beds in the eye department are increased from 16 to 24, and Dr. Peter Macdonald, the principal ophthalmic surgeon, stated that this would be the first hospital in England to be equipped with the new electrophonoidal apparatus for the treatment of chronic deafness. The hospital contains 180 beds, but Dr. Macdonald said that it serves so large a population that it requires double that number.

PLAY-READING IN AID OF A WELFARE CENTRE.—An interesting character-study of a divided personality was presented in the play "I. E. Robinson," a reading of which was given by Mr. Peter Davey, at Mitford House on May 14th in aid of a welfare centre. The initials "I. E." stand for "Impostor-Explorer," and the author, Miss B. L. Bowhay, deals sympathetically with the motives of an American chemist with a persistent exploration-phantasy, which he gratifies at the expense of truth. The play showed an intimate knowledge of life in the Southern Mississippi States and of scientific possibilities.

TRAFFIC ACCIDENTS AND HOSPITALS.—The annual report of Leicester Royal Infirmary states that last year 1169 persons injured in traffic accidents were treated, of whom 221 were admitted to the wards. With 72 exceptions these accidents were caused by motors and bicycles.—On Sunday, May 6th, accidents on the Southend arterial road were so numerous that the Victoria Hospital at Southend was unable to cope with the casualties. Many accidents were dealt with at the two dressing stations of the St. John Ambulance Association; firemen were pressed into ambulance service; and at the most congested spot five policemen, instead of one, were on point duty.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, May 21st.—8 P.M., ODONTOLOGY (at the Royal College of Surgeons, Lincoln's Inn Fields). Election of Officers and Council. Paper: Sir Frank Colyer: The Pathology of the Teeth of Elephants.

TUESDAY.—5 P.M., MEDICINE. Election of Officers and Council.

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. Election of Officers and Council. Paper: Dr. J. P. McGowan: Aplastic Anæmia. A discussion will follow in which Dr. H. P. Bayon and Dr. A. Piney will take part.

THURSDAY.—8.30 P.M., UROLOGY. Election of Officers and Council. Paper: Mr. Clifford Morson: Observations on the Radium Treatment of Vesical Carcinoma.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, May 21st.—9 P.M., Sir Archibald Garrod: Lessons on Rare Maladies. (Annual Oration.)

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY.

WEDNESDAY, May 23rd.—5.30 P.M. (at St. John's Hospital, 49, Leicester-square, W.C.), Sir John Bland-Sutton: The Debt of Dermatology to Optical Glass. (Annual Oration.) The annual dinner will be held on the same evening at the Café Royal, 7 P.M.

NORTH-WESTERN TUBERCULOSIS SOCIETY.

THURSDAY, May 24th.—3 P.M. (at the Tuberculosis Offices, Joddrell-street, Hardman-street, Manchester), Dr. Jane Walker: Tuberculosis and Employment.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 21st, to SATURDAY, May 26th.—WEST END HOSPITAL FOR NERVOUS DISEASES, Gloucester Gate, Regent's Park, N.W. Clinical demonstration of the Fundus Oculi (ophthalmoscopes required) by Mr. Lindsay Rea, at the In-patient Dept., Gloucester Gate, on Fri., at 8.30 P.M.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E. Clinical demonstration (gynæcological) by Mr. A. C. McAllister, on Fri., at 10 A.M. The above demonstrations are free.—CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C. Intensive course—clinical and operative. Third week. Occupying all day.—NATIONAL HOSPITAL, Queen-square, W.C. Course in Neurology for two months.—MAUDSLEY HOSPITAL, Denmark Hill, S.E. Course in Psychological Medicine. Last week. Further information from the Secretary.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, May 21st.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Monday and Wednesday, at 2.30 P.M., there will also be demonstrations of Gynæcological and Skin Cases by Mr. Aubrey Goodwin and Dr. W. Jenkins Oliver.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

MONDAY, May 21st.—10 A.M., Dr. Dowling: Skin Department. 2 P.M., Mr. Addison: Surgical Wards. 2 P.M. Dr. Trevor Davies: Gynæcological Department.

TUESDAY.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patients.

TUESDAY and FRIDAY, May 22nd and 25th.—4.30 P.M. Special Lectures, Dr. Page: Anæsthetics.

Daily, 10 A.M. to 5 P.M., SATURDAYS, 10 A.M. to 1 P.M. In-patients, Out-patients, and Special Department Anæsthetic and Operative Surgery Courses.

UNIVERSITY COLLEGE, Gower-street, London, W.C.

MONDAY, May 21st.—5.30 P.M., Prof. R. G. Harrison (Yale): Modern Trends in the Study of Animal Development.

TUESDAY, May 22nd, THURSDAY, May 24th, and FRIDAY, May 25th.—Prof. L. H. Henderson (Harvard): Blood: a Study in General Physiology.

INSTITUTE OF HYGIENE, 28, Portland-place, W.

WEDNESDAY, May 23rd.—3.30 P.M., Dr. T. J. Hoskin: Rheumatic Heart Disease; Its Incidence and Prevention.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, May 23rd.—4 P.M., Mr. Charles Heath: Middle-ear Disease.

ROYAL NORTHERN HOSPITAL INTENSIVE COURSE, Holloway-road, N.

MONDAY, May 21st.—2.15 P.M., Mr. L. E. Barrington-Ward: Demonstration of Surgical Cases. 3.15 P.M., Dr. Bruce Williamson: The Pneumonias in Children.

TUESDAY.—2.15 P.M., Mr. N. A. Jory: Treatment of Chronic Suppuration of Middle Ear. 3.15 P.M., Mr. J. Hunter: The Surgical Aspect of Goitre.

WEDNESDAY.—2.15 P.M., Mr. T. T. Higgins: Further Experience in the Treatment of Varicose Veins by Injection. 3.15 P.M., Dr. A. Lisle Punch: Fibrosis of the Lung.

THURSDAY.—2.15 P.M., Dr. W. H. McKinistry: Pathological Specimens. 3.15 P.M., Dr. P. O. Ellison: Pathological Investigations.

FRIDAY.—2.15 P.M., Dr. M. Donaldson: Displacement of the Uterus. 3.15 P.M., Dr. C. Gouldesbrough: Diagnosis of Gall-bladder Lesions by X Ray.

T. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.
THURSDAY, May 24th.—5 P.M., Prof. R. H. A. Plimmer: Some Recent Researches on Vitamins.

ATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, May 21st.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Riddoch: Spastic Paraplegia (2).

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Tumours of the Spinal Cord.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Neurosyphilis (1).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises (in Exercise Room).

ANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, May 22nd.—4.15 P.M., Dr. E. B. Leech: Some World Experiences with Gastric and Duodenal Ulcer.

NIVERSITY OF BIRMINGHAM POST-GRADUATE LECTURES.
THURSDAY, May 24th.—4 P.M. in the Medical Lecture Theatre, Edmund-street Buildings), Dr. Malcolm Campbell: The Value of Mineral Baths in Certain Conditions of Joints and Muscles.

NIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, May 25th.—3.30 P.M. (at the Royal Hospital), Dr. Imrie: Laboratory Aids in Diagnosis and Treatment of Gastro-intestinal Disease.

Appointments.

OLDSMITH, WILLIAM N., M.D. Camb., M.R.C.P. Lond., has been appointed Hon. Assistant Physician to St. John's Hospital for Diseases of the Skin, Leicester-square, W.C.

HITBOURNE, DAHLIA, M.B., B.S. Lond., Lady Medical Officer for Maternity and Child Welfare Work to the Lagos Town Council.

rtifying Surgeons under the Factory and Workshop Acts: ALDERSON, R., M.D., B.S. Durh. (Crowborough and Uckfield); BEAUMONT, F. K., M.B., Ch.B. Leeds (Finedon); CASSELL, C. W., M.D. Brux., M.B., Ch.B. Edin. (Chaddesley-Corbett, Worcester); LINZEE, N. H., L.R.C.P. Lond., M.R.C.S., D.P.H. (Kingston); and ROBERTS, H. M., L.R.C.P., L.R.C.S. Edin., L.R.F.P.S.G. (Saltcoats).

Vacancies.

For further information refer to the advertisement columns.

rmingham and Midland Eye Hospital, Church-street.—H.S. £110.

rmingham and Midland Homœopathic Hospital and Dispensary. Res. H.S. £150.

rmingham City Education Committee.—Asst. Sch. M.O. £600.

rmingham, Selly Oak Hospital.—Cas. O. At rate of £200.

ackburn and East Lancashire Royal Infirmary.—Fourth H.S. £130.

ilton Infirmary Dispensary.—H.S. £150.

ighton, New Sussex Hospital for Women and Children.—Hon. Anæsthetist.

rnley County Borough.—Asst. M.O.H., &c. £475.

mbridge Physiology School.—George Henry Lewes Studentship. £250.

mbridge University Pathological Laboratory.—John Lucas Walker Studentship. £300.

ncer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

rdiff, King Edward VII. Welsh National Memorial Assoc.—Area Asst. Tuber. P. £600.

rdiff Royal Infirmary.—H.S., Aural H.S., and Cas. Surg. O. Each at rate of £50.

elsea Hospital for Women, Arthur-street, S.W.—Jun. H.S. At the rate of £100.

ty of London Hospital for Diseases of Heart and Lungs.—Two H.P.'s. At rate of £100.

lchester, Essex County Hospital.—H.P. £150.

nbigh, North Wales Counties Mental Hospital.—Third Asst. M.O. £300.

wn County Regional Education Committee.—Sch. M.O. £750.

rham County and Sunderland Eye Infirmary.—H.S. £450.

rham, Holywood Hall Sanatorium, Wolsingham.—Asst. M.O. £450.

stbourne, Princess Alice Memorial Hospital.—Jun. H.S. At rate of £100.

East Ham County Borough.—Asst. Tuberculosis Officer (Part-time). £300.

East London Hospital for Children and Dispensary for Women.—H.P. At rate of £125.

Essex, Administrative County of.—Three Asst. County M.O.H.'s. Each £600.

Evelina Hospital for Children, Southwark, S.E.—H.P. £120.

Exminster, near Exeter, Devon Mental Hospital.—Jun. Asst. M.O. £300.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. £250. Also H.P. and H.S. Each £50.

Huddersfield Royal Infirmary.—Sen. H.S. £200.

Leeds, St. James' Hospital.—H.P. and S. £200.

Manchester, Ancoats Hospital—H.S., Orthopædic. £100.

Manchester Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Manchester, Salford Royal Hospital.—Cas. H.S. At rate of £125.

Manor House Hospital, Golders Green, N.W.—H.S. At rate of £200.

Metropolitan Hospital, Kingsland-road, E.—Phys. to Dis. of Skin Dept.

Middlesex Hospital, W.—Surg. and Asst. Surg.

Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Second Res. O. £175.

Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.

Queen's Hospital for Children, Hackney-road, E.—Phys. in charge of Skin Dept. Cas. O. Also H.S. Each at rate of £100.

Royal College of Physicians of London.—Charles Murchison Scholarship in Clin. Med. 20 guineas.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c.

Royal London Ophthalmic Hospital, City-road, E.C.—Two Out-patient Officers. Each £100.

St. Albans and Mid-Herts Hospital and Dispensary.—Res. H.S. £150.

St. Leonards-on-Sea, Buchanan Hospital.—Hon. Asst. H.S., on P. for Dis. of Chest. Also Hon. Ophth. S.

St. Mary's Hospital, W.—Surg. Reg. £200.

St. Thomas's Hospital Medical School.—University Chair of Dietetics. £1000.

Shanghai Municipal Council, Public Health Dept.—Assistant Pathologist. Taels 600 per mensem.

Sheffield Royal Hospital.—Temporary Resident. At rate of £80.

Stockport Infirmary.—Asst. Hon. Aurist to Ear, Nose and Throat Dept. Also H.S. £175.

Surrey County Sanatorium, Milford—Med. Supt. £900.

University of London, South Kensington, S.W.—Sir William Dunn Chair of Pathology. £1330.

Walsall General Hospital.—H.S. At rate of £125.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Res. Asst. Cas. O. Also Aural and Ophth. H.S. Each at rate of £100.

Westminster Hospital, Broad Sanctuary, S.W.—Sen. Res. and Cas. O. At rate of £104.

Wigan Infirmary.—Third H.S. At rate of £150.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Penarth (Glamorganshire).

Births, Marriages, and Deaths.

BIRTHS.

HALLIWELL.—On May 8th, at Welbeck-street, the wife of Arthur C. Halliwell, F.R.C.S., of a son.

LIVINGSTON.—On May 9th, at Welbeck-street, the wife of Squadron-Leader P. C. Livingston, F.R.C.S.E., R.A.F., of a son.

MARRIAGES.

BENZECRY—GABRIEL.—On May 8th, at Spanish and Portuguese Synagogue, Lauderdale-road, W., Dr. J. S. Benzecry to Lillian, daughter of Mr. and Mrs. W. M. Gabriel, of Pembridge-villas, W.

DOYLE—HUTTON.—On May 10th, at St. Alban's Church, Teddington, Middlesex, Martin Redfern Doyle, M.R.C.S., L.R.C.P., to Nella, only daughter of the late Henry Hutton and Mrs. H. Hutton, of Teddington.

DEATHS.

CLARK-JONES.—On May 8th, 1928, at 1, St. Matthews-gardens, St. Leonards, Edwin Clark-Jones, M.R.C.S. Eng., L.R.C.P. Lond., aged 49 years.

GILMOUR.—On May 13th, suddenly, at his residence, Wimbledon Park, Andrew Gilmour, M.D., M.R.C.P. Edin., D.P.H., M.O.H., Wimbledon, in his 52nd year.

PRATT—On May 10th, at Fern Grove, Hainton-avenue, Grimsby, Lincs., Arthur Alfred Pratt, M.D., aged 60 years.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

SUNLIGHT IN MODERN MEDICINE.

IN the course of a Chadwick Lecture delivered in London on May 15th, Major Walter Elliot, M.P., said that experience in England showed that the best results of treatment by ultra-violet rays were obtained in lupus, certain skin conditions, rickets, and superficial lesions in surgical tuberculosis. The general conclusions of the reports received by the Ministry of Health were that while ultra-violet light was by no means a general specific for all forms of disease, it formed a useful accessory therapeutic weapon. The Scottish verdict was somewhat more enthusiastic, and a special report by the Board of Health said that "its value in the less severe forms of non-pulmonary tuberculosis is unquestioned. In pulmonary cases the results have not been discouraging but much more work will require to be done. In child welfare work, on the whole, the results are most encouraging. They fully justify the expense and labour involved in providing this method of treatment." A clue to these differences of opinion might be found in the different amount of ultra-violet radiation recorded in the two countries. At Ventnor, Isle of Wight, the average daily readings for November and December, 1926, was 2·35. At Edinburgh the readings were nil for the whole three months between November, 1925, and March, 1926, and even in March and April the readings only averaged 1·1. A supplementary source of ultra-violet light might therefore be expected to show more obvious results in the north than in the south.

In conclusion, Major Elliot remarked that the fundamental requirements of the normal being—fresh air, fresh water, fresh food—were yet far from being met by the people of this country. Till they were fulfilled the administrator would have a part to play in the twentieth century not less important than he had in the nineteenth.

MEDICAL WOMEN'S FEDERATION.

THE annual dinner of the Medical Women's Federation, held in the Edward VII. Rooms, Hotel Victoria, London, on May 10th, and attended by more than 200 of its members, was a lively and successful occasion.

Dr. Christine Murrell, who was in the chair, made no formal speech, but succeeded in stimulating other speakers by her felicitous remarks in introducing them. The toast of "The Federation" was proposed by Sir Robert Bolam, who congratulated medical women on having seized the opportunity offered to them during the war of obtaining privileges which were rightly theirs, and on uniting to hold them for the common good. He expressed a hope that the time would come when a separate women's organisation within the British Medical Association would become unnecessary. Dr. Letitia Fairfield, who responded, believed that such a time would never come, for medical women had much to gain by standing together and acting as a unit. The Federation, which now had a membership of over 2000, included 14 local federations, and was itself a member of an international group comprising 14 countries. She solicited the aid of the Association in removing from medical women the cruel disability imposed upon them by local authorities when they committed matrimony. In general practice, she said, women were increasingly making good. Dr. Clara Stuart proposed "The Guests," who, she said, were representative of many ranks and professions. Response for the women guests was made by Mrs. E. D. Simon, sometime Lady Mayoress of Manchester, who spoke with eloquence on the wholesome effect of publicity on the position of women in public life. Women teachers in Manchester had recently achieved their right to matrimony without dismissal owing to the searching light thrown upon the controversy in the public press, and she did not doubt that proper ventilation would have a similar happy result in the problem of women's medical education which had been raised in London. Sir Walter Fletcher, who also responded, spoke of the work of women in various spheres of medical research, especially in the regions of cancer, radium, and food deficiency. He announced that pressure was now being brought upon authority to obtain a fuller supply of radium in this country. Prof. M. Lucas Keene eulogised "The Chairman" as an example of successful general practitioner and faithful pioneer of women's freedom. Apart from the guests already mentioned, there were present amongst others Lord and Lady Balfour of Burleigh, Sir Herbert Waterhouse, Major-General J. B. Smith, Mrs. Philip Snowden, Sir Gregory Foster, eminent headmistresses in the persons of Miss Lowe, M.A., Miss Tuke, M.A., and Miss Sparks, M.A., Dame Janet Campbell, Dr. Jane Walker, Dr. Catherine Chisholm, Prof. Winifred Cullis, Dr. Graham Little, M.P., Dr. James Neal, Prof. Grey Turner, and Miss Musson, R.R.C.

VACCINATION IN THE IRISH FREE STATE.

OUR Dublin correspondent writes: The division on th second reading of Mr. Everett's Vaccination Bill, a privat measure intended to introduce a "conscientious objection clause to the Irish vaccination laws, was taken last wee in the Dail, and resulted in the defeat of the Bill by 75 vot to 39. There were members of every party in both divisio lobbies, though ten members of the Government and nearl all their supporters voted against the Bill. All the medic men in the Dail, with one exception, opposed the Bil The exception was Dr. Ryan, one of the deputies for Count Wexford, the antivaccinationist stronghold. For the pa few weeks all deputies have been nearly "snowed under by the showers of propagandist literature which reache them from London. It is satisfactory that, in spite of th active agitation in favour of the Bill, nearly a two-thir majority of the Dail showed determination to maintain th full rigour of the existing vaccination laws. Both th President of the Executive Council and the Minister f Local Government and Public Health (Mr. Mulcahy) mad strong speeches against the Bill. It may be hoped that th Department of Local Government and Public Health w be able now to insist on the existing laws being carried ou

THE CHILD'S LOG.

ALL sensible parents keep some record of their children growth in length and weight, if not in grace. It was, v believe, the late Mr. Jonathan Hutchinson who first design a more elaborate record which might not only be of intere to the diarists but have some anthropological value. A elaborate log-book has now been designed by Eva Viscounte Erleigh with the attraction of copious illustrations Ernest H. Shepard. In a prefatory note Dr. Eric Pritcha vouches for the accuracy of the information given and f the soundness of the principles of mothercraft inculcate "The Little One's Log" is published by Partridge, Londo at 7*s.* 6*d.*

CHRONIC OSTEOMYELITIS IN LONG BONES.

Lieut.-Colonel H. Hallilay, I.M.S. (Rawalpindi), write In connexion with my article under this title in your iss of March 10th (p. 490), I have received a letter from M Seton Pringle (Dublin) in which he says: "You seem have worked out an operation almost identical to one whi I described years ago in the *British Journal of Surger* I enclose you a reprint of this article. I have not found a reason to change my opinion or alter the technique to a extent as my experience increased." I had not read M Pringle's article, and I honestly thought I had devis something new. There is, however, nothing new under t sun, an adage of which I am reminded by this incide since Mr. Pringle's article and the operation which describes is indeed almost identical with my own.

HYGIENE AND SANITATION IN BRITISH MALAY

THE Handbook of British Malaya for 1927, compiled Mr. R. L. German, of the Malayan Civil Service, a published with official authority, is an admirable illustrat guide to the public life of the Malayan States, and to vegetable and mineral resources. Chapter XI. sets out t organisation for the promotion of hygiene, giving t prevalence of zymotic and other disease in the varic districts, classified according to the very varied rac inhabitants. The handbook, which is well indexed a contains a useful map in the back cover, may be obtain at the Malay States Information Agency, Malaya Hou 57, Charing Cross, London, S.W., for 2*s.* 6*d.*

Queen's University, Ontario, has received an offer £10,000 from a resident in Chicago to found a chair preventive medicine and public health.

Dr. Pietro Bini, of the Hospitals of S. Chiara at Pi tells us that on April 28th the *Popolo d'Italia* published note by him on the rescue of personnel from a sunk su marine. It appears that Dr. Bini has constructed a worki model of an apparatus which, as soon as the submarine h been reached and the compartment containing the surviv located, enables a single diver in the space of a few minu to put the rescue ship in a condition to provide for th pure air, electric light, telephone, food, and other necessit to preserve life. Meanwhile the inventor is awaiting invitation to demonstrate his apparatus before a judic committee of the National Institution of Research.

A preliminary report by the County Tuberculo Committee in the area of the Lancashire County Cour shows that the number of deaths from pulmonary tub culosis in 1927 was 1401, a decrease in comparison wi previous years, and the death-rate from this form of disease—viz., 0·61 per 1000 of the population—is again lowest on record. For non-pulmonary tuberculosis death-rate of 0·16 per 1000 is the same as in 1926, and only half what it was in 1914.

The Lessons OF RARE MALADIES.

The Annual Oration delivered before the Medical Society of London on May 21st, 1928,

BY SIR ARCHIBALD GARROD, D.M., K.C.M.G., LL.D., F.R.S.

TO-DAY, when the echoes of his tercentenary have scarcely died away, and the work of William Harvey is in all our minds, it is fitting that I should take, as the text of my discourse, some words of his which appear to me to state my thesis better than had ever been done before, or has been done by any more recent writer. The passage to which I refer is contained in a letter which Harvey wrote, only six weeks before his death, to a Dutch physician, Dr. Vlackveld of Haarlem, who had asked his opinion upon an unusual specimen. Translated, it runs as follows :—

" It is even so—Nature is nowhere accustomed more openly to display her secret mysteries than in cases where she shows traces of her workings apart from the beaten path ; nor is there any better way to advance the proper practice of medicine than to give our minds to the discovery of the usual law of Nature by careful investigation of cases of rarer forms of disease. For it has been found, in almost all things, that what they contain of useful or applicable is hardly perceived unless we are deprived of them, or they become deranged in some way."

There are many of us to whom a scientific research appeals in proportion to its practical utility, and others for whom a discovery loses much of its charm when applied to practical uses. So, too, I take it, there have always been, and always will be, many members of our profession to whom the study of those common diseases which are of so great practical importance, and to cope with which is the daily task of the medical man, make the strongest appeal, whereas for others, who form but a small minority, the investigation of rare maladies has a special attraction.

Undoubtedly the collector's instinct is very widespread, and in early life is almost universal. To form a good collection of stamps, birds' eggs, or butterflies is the ambition of most boys ; and such ambitions persist into later life, although the field of the collector may change. With this instinct is mixed up what may be styled a " superiority complex," a desire to outvie one's fellows, to break some record, to climb some untrodden peak, or to acquire some outstanding work of art. To attain to such ends men will brave injury, disease, or death. No doubt this instinct has a share in the lure of rare maladies, but if that were all, and if the pursuit of such studies had no other aims, I should not be speaking of it this evening. It is rather, as Harvey saw so clearly, because we find in rare diseases the keys to not a few dark places of physiology and pathology, that I would recommend them to you as objects of study.

Even Morgagni, who held that there was no other road to medical knowledge than the collection and comparison of many cases of disease and of dissections, added that he did not despise, but specially studied, those which are rare and remarkable, despite the fact that their rarity makes such collation difficult.

We are told that in France, at the time of the first empire, when the French universities were in the melting-pot, there were established, in some of the medical schools, professorships for the exposition of rare cases and diseases ; and in the " Dictionnaire des Sciences Médicales," published in 1813, there is an article by Fournier on rare cases which extends to no less than 120 pages. In our own medical journals and transactions I have found only two addresses on the subject, but the authors of these were both giants in their generation, in whose footsteps one treads with timidity. In 1882 Sir James Paget [2] opened the series of Bradshaw Lectures at the Royal College of Surgeons of England with a discourse on Some New and Rare Diseases, and in 1889 Sir Jonathan Hutchinson [3] stood in this place, and delivered the annual oration on the Clinical Uses of Rare Diseases.

Fournier's article, like the compilations published in earlier centuries by Zacutus Lusitanus and others, refers to a large number of cases, gathered from different sources. Some of them are fantastic ; spontaneous combustions, scorpions in the brain, and the like ; some are of great interest, such as a pineal tumour, a large salivary calculus, and a family with hæmophilia ; and yet others are most intriguing, such as one quoted from Vepfer, which I have, as yet, failed to trace, of an elderly hemiplegic with yellowness of the skin limited to his paralysed side, and even to one half of his nose.

But the cases are thrown together higgledy-piggledy, with no systematic arrangement, and no suggestive comments. Just so in some museums collections of great value lose much of their educational value for lack of proper grouping ; whereas in others, by skilful arrangement of material, perhaps less precious, we are shown the stages of evolution of living things, or of man's tools, weapons, or playthings. It is in the latter spirit that Paget and Hutchinson approached their subject, and I cannot forbear to quote a passage from each address, so characteristic in its phrasing that the elder among us will seem to hear the voice of the author behind his words.

Thus Hutchinson :

" Amongst the infinitely varied derangements of structure and function which make up the total of human maladies we have some which are constantly before us, and others so infrequent that a man may live through a long professional life and scarcely see a single example of them. All will admit that the first must be studied, as a matter of duty, by every conscientious practitioner, but respecting the latter there is a wide-spread and very natural feeling that it does not matter whether we understand them or not. It is against this form of apathy that I wish to protest to-night, and I am not without hope of making it clear that these varieties are often the most instructive ; that they stand in close relationship to the common, and that it is the duty of all, so far as possible, to understand them, and to try also to further the knowledge of them."

Paget, speaking of rare cases, made the same appeal :

" But even as they are, singly and in disorder, we ought not to set them aside with idle thoughts or idle words about ' curiosities ' or ' chances.' Not one of them is without meaning ; not one that might not become the beginning of excellent knowledge, if only we could answer the question—Why is this rare ? or, being rare, why did it in this instance occur ? "

Harvey, Paget, and Hutchinson all suggest that the rarer maladies are specially instructive, but Harvey's reasons for the paying of special attention to such rarities appear to me the most convincing ; and even to-day, when the boundaries of knowledge have been so greatly widened, they could hardly be improved upon.

That the study of what may be styled Nature's experiments is of special value, and that many lessons which rare maladies can teach could hardly be learnt in other ways, it will be my aim to show. Nor is this true of diseases alone—as witness the part played by the strange birds and beasts of remote oceanic islands in the genesis of the theory of natural selection.

The material available is so scanty that, as Morgagni pointed out, the collection and comparison of many examples is out of the question ; but, in connexion with common and rare diseases alike, the careful study of individual cases may teach us much. As witness the work of James Mackenzie and of Thomas Lewis on the so common derangements of the heart's beat, and of Lewis and his fellow-workers upon the flush, the flare, and the wheal which result from a trifling trauma, such as a stroke, applied to the skin. These researches show us how immensely our knowledge might be enlarged if all such everyday phenomena were made the subject of accurate scientific investigation along similar lines.

There are two preliminary questions to be considered at the outset of our inquiry—namely, whether we need to draw a dividing line between rare cases and rare diseases; and, secondly, what is meant when we speak of a rare disease?

I think that the answer to the first question is in the negative. Any example of a rare disease is a rare case; and a rare syndrome may be due to a lesion of a common kind in an uncommon situation. Nor is it easy to define the meaning of the term disease, which is habitually applied to a great variety of conditions belonging to widely different categories.

As regards the second question, I do not propose to include maladies which are common in hotter countries, but rare in or absent from our own; nor infective diseases of the lower animals rarely met with in man; nor maladies due to dietary defects, such as scurvy, beri-beri, and pellagra; or which have become rare under changed conditions of life, such as chlorosis.

The truly rare maladies, of which I propose to speak, are such as are seldom seen in men living on any part of the globe nor under any conditions of life. It is true that a rare case may be only an extreme example of a condition which, in minor degrees, is common or well-nigh universal. As Hutchinson pointed out all of us whose fingers ever "die" suffer from a slight degree of Raynaud's disease, the text-book description of which is based upon extreme examples; but the rare malady, in the most strict sense, results from a lesion limited to a very unusual situation, or from some constitutional peculiarity of the patient which determines its occurrence. As often as not the patient and not his disease is exceptional.

A further question is, what is the criterion of rarity. I take it that between those common illnesses which go far to fill the wards of our hospitals, and those so uncommon that the recorded examples can be counted upon the fingers, every degree of rarity is represented. Yet there is not much practical difficulty in drawing the line, and it seems to me that the bulk of diseases fall into one or other of the more extreme categories, and that comparatively few are "*somewhat* rare."

You will remember that Harvey wrote: "that it has been found, in almost all things, that what they contain of useful or applicable is hardly perceived unless we are deprived of them, or they become deranged in some way." That is, indeed, one of the chief reasons why rare maladies can teach us so much. They call our attention to the ordinary things which we have accepted as matters of course without inquiry.

Thus a London street without a lamp-post is very rare, and it is possible that some of my hearers have walked down Sackville-street frequently, and yet have failed to notice that it is such a street, or that the lamps are carried upon brackets which project from some of the houses. When we do notice this, our thoughts turn to the history of street-lighting; back to days before those of the lamp-lighter of our boyhood, when the lighting depended upon the individual householders. So the unusual has called our attention to the usual and familiar, with the result that our knowledge is increased.

Again we accept without a thought our own asymmetry, and regard it as natural that our livers should lie to the right, our spleens to the left. When we meet with a case of transposition of viscera it sets us thinking, and we wonder what is the underlying cause of the more usual arrangement. The albino, too, with silvery hair and unshaded eyes, directs our thought to the problems of animal coloration.

To pass on from the general to the particular. One important and most instructive group of rare maladies includes those which are due to a strictly localised lesion of some particular organ, and in which the disease performs a physiological or pathological experiment. Tumours of the pituitary gland produce in some cases the syndrome which goes by the name of Fröhlich who first described it, and which is ascribed to lack of the hormones of that gland. Similar changes have followed destruction of the pituitary by a bullet; but no accidental nor surgical proceeding can, as some tumours appear to do, bring about over-activity of an endocrine gland. Despite the liability of certain organs to special kinds of tumours, it is to be expected that lesions so accurately localised will be, to say the least, uncommon; and this more especially when the lesion is not a tumour of a gland but an area of damage, due to hæmorrhage or inflammation, in some part of the central nervous system.

A larger number of rare maladies have, as their underlying causes, more or less abrupt departures from type such as are usually spoken of as mutations. These mutations, which are transmitted to offspring, either as dominant or recessive characters, may be in themselves disadvantageous to their subjects; or may entail such impairment of resistance to external influences that disease may result from apparently trifling causes, such as traumata too slight to induce disease in normal people: or that the agents of disease may find in them an unusually receptive soil. Given favourable conditions the same mutation may reappear from time to time, in subjects who do not inherit it, but hereditary transmission is far more common.

Such departures from type are often very instructive as throwing light upon problems of heredity, on the development of our bodies and of the living processes of which they are the seats, and on the liabilities of individuals to special forms of disease. Seeing that conspicuous mutations are not common, we have here an additional reason for the special interest which attaches to the study of rare maladies.

Unfavourable mutations—and it is with these alone that we are now concerned—are of various kinds. Some are anomalies of structure, and others of function. The structural mutations may manifest themselves as malformations, such as claw-hand or excess of digits; or as anomalies of tissues of a particular class such as the neuro-muscular systems, an affection of which, though obviously congenital and hereditary, develops only in late childhood, or even in adult life.

Functional mutations, like interferences with a delicate and complicated machine, bring about results which, however undesirable, may throw valuable light upon its normal working. So from the study of some rare maladies we gain much knowledge of diathesis, the constitutional factor in the causation of disease.

Idiosyncrasies also, those special sensitivities to certain protein substances, to pollens, foods, and drugs, have a share in the causation of some rare syndromes, which serve to throw light into dark places of physiology and pathology.

It will obviously be impossible, within the compass of a brief address, to do more than mention a very few examples amongst the many which might serve to illustrate my theme; and I will take as my first example one which is perhaps the most important of all, owing to the great value of the lessons which it has taught.

Addison's disease may be classed amongst the least rare of rare maladies, and all of us have met with cases of it. Although its signs and symptoms are conspicuous, our knowledge of it dates back only to the year 1855, to the publication of an epoch-making monograph in which were set forth the results of some researches of the great physician after whom it is named.

We can follow him, in the pages of his monograph, through the stage of clinical observation of a syndrome now familiar, each item of which, the pigmentation, asthenia, low blood pressure, and gastro-intestinal disturbances attracted his attention.

Simultaneously he recognised the pathological change associated with this fatal malady, the extensive disease, usually caseation, of the adrenal capsules. The association of the clinical and pathological pictures was so close that in his lat-

ases he was able to predict the adrenal lesions uring the lifetime of his patients.

Addison's pamphlet may serve as a model of cientific clinical medicine controlled by morbid natomy, and merely as such is of great interest. ut that is far from all, and in his preface its author escribes it as "a first and feeble step towards quiry into the functions and influence of the drenals, suggested by pathology"; for it was lear to him that it was the seat and not the nature f the lesions which determined the symptoms.

Before long it became clear that Addison's disease , in the great majority of cases, tuberculosis in an nusual situation. But even now there are still problems o be solved. We cannot yet explain each symptom s due to lack of some known product of the destroyed drenals. We do not know the cause of the gmentation, nor why the tuberculous lesions should often be limited to the pair of adrenal glands, which ppear to be seats of election of such infection.

From that "first feeble step" has grown up our nowledge not only of the functions of the adrenals, ut also of the other endocrine glands, and of the ormones which they secrete. As more has been arned about them we have come to recognise in iem the regulators of the metabolism of the tissues; nd not of metabolism only, but of height and weight, mperature, and blood pressure. It has become creasingly evident that the several ductless glands, cting, some as mutual opponents and others as llies, form a balanced mechanism, which sets limits these various functions, and by readjustments of hich the phenomena of puberty and of the climacteric e brought about.

It is true that long before 1855, exophthalmic oitre had been recognised and described by several bservers, Caleb Parry, Graves, Basedow, but it as not until much later that the signs of that sease were recognised as due to disturbance of the ternal secretion of the thyroid gland. Even as te as in 1889, Hutchinson, in his oration, referred Graves's disease and myxœdema as extreme forms common conditions, and added: "Not that they e in any way allied. The one is a functional nervous sorder, the other a slowly insidious change of ructure."

The most recent advances in endocrine studies; ie isolation and synthesis first of adrenalin itself, nd lately of thyroxin; the study of their physiological tions, and the utilisation of insulin, may rank nong the greatest achievements of medical science, nd all may be traced back, directly or indirectly, Addison's researches.

In like manner local lesions have helped to reveal ie functions of other ductless glands besides the drenals, but the lesions in question have been for the ost part tumours, some of which abolish the activities the affected structure, whereas we are led to lieve that an adenoma may actually enhance its ower of producing hormones. So in the case of the tuitary body tumours are capable of producing ch widely different pictures as acromegaly on the ie hand, and Fröhlich's syndrome on the other.

Save from information so afforded we know little the functions of the adrenal cortex, but an adenoma an adrenal has so frequently given rise to a aracteristic syndrome, that we cannot doubt that a sorder of the secretion of the cortex is its exciting use. So striking indeed is the appearance of a ild with such a tumour, an appearance which has en aptly likened to that of a brewer's drayman, e obesity, hirsuties, and florid countenance, that correct diagnosis has repeatedly been made before abdominal tumour could be felt. However, our nowledge of this matter is still far from complete, nd not at all comparable with what is known of ie functions of the thyroid and pituitary. What we know has been gained by the observation of cases a very rare condition.

No less rare are tumours of the pineal gland, which ave already yielded most suggestive information, though their message is still obscure. In a certain number of cases such tumours have been associated with a condition of premature puberty. Naturally such developments are only pronounced when the patient is below the ordinary age of puberty; but tumours of the pineal in adults, although giving rise to pressure signs, have failed so completely to induce changes suggestive of endocrine disturbance that it is inferred that the gland ceases to function before puberty. If so, it may be regarded as a "Peter Pan" gland, so to speak, the function of which is to restrain too rapid growing up. However, there are certain difficulties in connexion with such an interpretation, and there are some who maintain that the pineal is at no period an endocrine gland. We have as yet no clear experimental proof of its possession of such functions, and in some cases the syndrome has failed to develop, although all the needful conditions appeared to be fulfilled.

Evidence of a like kind, based upon the destruction of a special structure, has played an important part in the elucidation of the functions of the several parts of the central nervous system, for instance, Broca's observations upon the motor speech centre. Here again a tumour is more apt to produce a sharply localised lesion than is a hæmorrhage or an inflammatory process, and it is not remarkable that such lesions are uncommon.

To pass on now to a wholly different class of rare maladies I should have preferred, had it been possible to say nothing this evening about inborn errors of metabolism, a subject with which I fear to weary my colleagues; but to omit all reference to alcaptonuria would be to forgo some of the strongest arguments which can be brought forward in support of my thesis. Alcaptonuria is so rare an anomaly that, in all probability few of those present have ever met with it, although, when met with it is little likely to escape attention. It behaves as a characteristic Mendelian recessive character, and is wont to occur in several brothers and sisters whose parents are usually normal, but are in a large proportion of cases first cousins. Indeed, it was in this connexion that Bateson pointed out that consanguinity of parents is to be expected to be common in the case of a rare recessive character, to which both parents must contribute recessive gametes. Conversely, an anomaly which is so transmitted is presumably recessive, and so a valuable aid is provided to the recognition of recessive characteristics in man.

By the study of alcaptonuria from the standpoint of chemistry and by the administration to its subjects of a variety of aromatic compounds, much light has been thrown upon the catabolism of proteins, and especially upon the fate, within the organism, of the aromatic fractions tyrosin and phenyl-alanin, of which, almost alone among aromatic compounds, the benzine ring is broken up in the course of normal metabolism. Moreover, it has taught us how a metabolic product may have the power of staining certain living tissues in a selective manner; and lastly, we learn from this anomaly that a trifling deviation from the normal in metabolism, and the presence in the issues of small quantities of an intermediate product, normally destroyed, may so lower the resistance of tissues that after the lapse of many years there is developed, under the ordinary stress and strain of daily life, a characteristic form of osteo-arthritis. Here we are confronted with a tangible diathesis, a predisposition due to a recognised cause; and we may claim with confidence that, in this and in the several other ways mentioned, the study of alcaptonuria has contributed very materially to the advancement of medical science.

Still rarer than alcaptonuria is congenital porphyrinuria, or hæmatoporphyria, and although it stains the bones a deep brown colour, I have failed to find any records of human bones so stained, save in the few known cases of the anomaly. Such staining could hardly be overlooked at an autopsy, and the deep red colour of the urine is itself sufficiently conspicuous. It was the investigation of a case of

this kind which led Hans Fischer to embark upon fruitful researches upon the pigments of the porphyrin group, which have shown that these pigments appear much lower in the evolutionary tree than hæmoglobin, and even in so lowly an organism as yeast. Keilin's[4] discovery of cytochrome, which is so widely distributed a constituent of living cells, opens out new vistas, and adds greatly to the importance of such inquiries.

This anomaly has also taught us much regarding the action of light upon the living organism, and the origin of some skin affections which result from exposure to light.

My next example will be taken from that group of tissue anomalies which includes the familio-hereditary affections of the nervous and muscular systems, for which Gowers suggested the name of "abiotrophies," and which are fraught with valuable lessons for pathologists and clinicians alike. They illustrate various types of hereditary transmission, dominant and recessive and that peculiar form known as sex-linked recessive, which is transmitted by normal females to their male children.

They present morbid states which are obviously hereditary and inborn, but which give rise to no obvious signs or symptoms until some years after birth. If it be permissible to compare the human body to a bridge, so strongly constructed that it will last for many years, unless subjected to strains much greater than those to which it is habitually exposed, the body of the victim of an abiotrophy may be compared to a bridge so much less solidly built that it quickly suffers damage, and soon succumbs, under the strain of the ordinary daily traffic of the roads.

The abiotrophies, which, by the way, are not confined to neuro-muscular tissues, illustrate a point on which Hutchinson was wont to lay much—perhaps too much—stress, namely, the affinities between morbid states and their tendency to merge into each other. Thus in a particular family different tissue anomalies may crop up in different members, in one some form of muscular atrophy, in another a myotonia. In some instances this apparent affinity is due to an underlying anomaly of which the several symptom-complexes observed are all manifestations, just as local riots may be the only obvious signs of widespread popular unrest.

An excellent example of this is afforded by the malady known as dystrophia myotonica, and how our knowledge of it has developed is well told in a paper by Adie and Greenfield,[5] published in 1923. The story begins with the recognition of a group of cases in which a myotonia, such as is the conspicuous feature of Thomsen's disease, is associated with muscular atrophy of somewhat unusual distribution, facial, cervical, brachial, and sometimes peroneal—the Batten-Steinert-Curschmann syndrome. Then follows the discovery of the association of that syndrome with cataract, either in the patients themselves, or in members of earlier generations of their families. Later, it was recognised that dystrophy, myotonia, and cataract alike are some only of the manifestations of a great heredo-familial malady, other signs of which are changes in the thyroid gland, testicular atrophy, baldness, increase of sweat and tears, and cyanosis and coldness of the extremities. The muscular dystrophy and myotony have in the observed cases been limited to the collaterals of one generation of a family, seldom developing before the age of 25, but cataract has been traced back through four or five generations. Moreover, as is not infrequently the case with abiotrophies, the signs tend to appear earlier in members of the later generations.

Some recent investigators hold that the underlying factor in the disease under discussion is a widespread defect of the endocrine glands, and that we are here confronted with a pluriglandular syndrome. It may well be that other affections of this group, the abiotrophies, will prove to be local manifestations of much wider maladies; and that the link between the calcareous deposits and the digital anomalies in myositis ossificans may be found in a generalised defect of the mesenchymatous tissues, of which these are merely the most conspicuous signs.

Let us turn now to the consideration of a very rare and curious disease which was first described by Gaucher in 1882, and goes by his name.[6] He described, under the title of primary epithelioma of the spleen, a form of enlargement of that organ, met with in a child, and characterised by the presence, in the splenic tissue, of numbers of large hyaline cells which stain but feebly. The microscopic picture is alike in all cases of the malady and is quite distinctive. Before long it was realised that this was no form of malignant growth, and that the changes were, by no means, limited to the spleen. The liver becomes greatly enlarged; the hæmopoietic tissues generally, including the bone-marrow are involved; and the peculiar Gaucher cells are found in all the affected parts. Beginning in infancy the disease is in the highest degree chronic, and continues on its snail-paced course through decades of the patient's life. It is wont to occur in several children of a family whose parents are not affected, but consanguinity of the parents has not been recorded. A large majority of the sufferers have been females.

In recent years it has been shown that the Gaucher cells owe their peculiar swollen and hyaline appearance to the presence in them, in quantity up to 10 per cent. of the dried spleen, of a chemical substance which has not been found in normal splenic tissue. This substance, kerasin, is allied to cerebrin, and is a member of the class of galacto-lipins. Whether the kerasin, as such or a more complex compound of which it is a constituent, is formed in or deposited in the Gaucher cells has not yet been determined. Pick, one of the most recent writers on the subject, holds that Gaucher's disease is due to an inborn error of metabolism, but thinks it probable that here the metabolic process is perverted, and not merely interrupted at an intermediate stage; in other words, that kerasin is a product of abnormal metabolism. He points out that in diabetes a deposition of abnormal chemical materials occurs in the reticulo-epithelial tissues.

Here again we may trace the successive stages of the elucidation of the nature of a rare malady, fraught with important pathological lessons. The subject of such maladies as the abiotrophies and Gaucher's disease furnish striking examples of constitutional liabilities. It is because they are uncommon individuals that they are predestined to suffer. In other words, the patient rather than the malady is rare.

I trust that the few examples which have been quoted will suffice to show how much has been learned from the study of Nature's experiments, and even that they are in some instances more instructive than our commoner ailments. But my chief object is not to show how much has been accomplished, but to urge the continuance of work on these lines; seeing that there are many rare maladies the lessons of which have been learnt only in part, or have not yet been learnt at all. Yet when we compare them with those of which I have already spoken, we cannot doubt that they "might become the beginning of excellent knowledge"; and even whilst their problems are still unsolved, they offer many points of interest.

For example, the syndrome known as intermittent hydrarthrosis has features which may be described as uncanny. Effusion into one or both knee-joints, and only seldom into other articulations, recurs with regularity comparable to that of some forms of malaria, but which is clearly not connected with the life-history of any parasite. The period varies in different cases, but apart from slight progressive postponements or anticipations, remains constant for the individual case. From the commencement of one attack to that of the next, a common interval is from six to eight days, and the usual duration of an attack is about three days. So the patient can

predict with accuracy the dates of future attacks nd make arrangements accordingly.

Obviously the trouble is not primarily in the oints, for they are usually normal between attacks. loreover, energetic local treatment of an affected nee may cause the hydrarthrosis to transfer its ttentions to the other, and the attacks cease uring a pregnancy to return after delivery.

An exactly similar periodic hydrarthrosis is sometimes met with in cases of arthritis of various kinds. he distension of the joint with fluid recurs at regular ntervals, but the clinical picture is blurred by the ailure of the joints to recover between the attacks. chlesinger,[7] who has studied this affection for many ears, does not include these secondary cases in the ame category as the primary ones, but I cannot see ny sufficient grounds for excluding them.

It was Schlesinger who originally suggested that he hydrarthrosis was a kind of *hydrops hypostrophos*, nd more and more evidence has been produced n favour of its anaphylactic nature. In some cases he attacks have coincided with transient swellings f the lips or eyelids, in others with forms of urticaria, nd in others with asthma, but not always simulaneously with the joint trouble. They may alternate, nd one patient said that she preferred to have asthma n her knees rather than in her lungs. In a few cases esensitisation by small injections of protein have een tried with encouraging results, but they are too ew as yet to be conclusive.

There is undoubtedly a connexion between the utaneous lesions of the erythema group and affections f the joints. For evidence we need not seek further nan the familiar serum sickness, and Henoch's urpura, erythema nodosum, and even rheumatic fever ell the same tale. Again, periodicity is met with in ther maladies of the anaphylactic group, in rythemata occasionally, in asthma often, and in lenoch's purpura almost always. The periodic omiting of children also is probably another member f the group. But in none of these other conditions, ith the possible exception of the last, is there any uch accurate periodicity as in hydrarthrosis. The ost likely explanation would appear to be that each ttack desensitises the patient for a time, at the xpiration of which the trouble recurs. As long ago s 1868, Salter, in his book on asthma, written long efore sensitivity to proteins was dreamed of, suggested nat the periodicity in some cases of that disease nd the apparent immunity in the intervals might e due to the accumulation of an unknown something etween attacks and its discharge during the attack. le mentions that "for some time after an attack, the me varying according to the interval characteristic t that particular case, the patient may expose imself to the ordinary exciting causes of the aroxysms without the slightest fear of inducing one." nd that was written 60 years ago!

When we review the outcome of the study of ntermittent hydrarthrosis up to now, we realise nat its lessons are only half learnt, and that it has ill more to teach us.

This is even more true of the very uncommon ndrome known as sulphæmoglobinæmia.[8] No orbid condition asks more clearly Paget's questions: Why is this rare? and, being rare, why did it in is instance happen?" It is clearly an acquired alady, with no indication of family or hereditary currence. The presence in the red corpuscles of ie compound sulphæmoglobin produces a somewhat eculiar kind of cyanosis, similar to that due to the lied methæmoglobinæmia. The investigation of this ndition, by its discoverer Hijmans van den Bergh nd others, has brought to light a number of interesting cts, but its chief problems still await solution. is clear that the presence of sulphæmoglobin in the lood is not due to any excess of hydrogen sulphide the circulation, and in cases of poisoning by ydrogen sulphide it is not observed. Given certain conitions the normal trace will suffice. The formation of ulphæmoglobin is favoured by the presence of certain hemical substances, notably reducing agents such as hydrazine, in the blood, but it does not occur, even with hydrazine, if oxygen be completely excluded. Snapper has shown that prolonged administration of phenacetin, in doses too small to induce methæmoglobinæmia, can give rise to sulphæmoglobinæmia.

In some cases a nitrifying bacillus has been found in the saliva, and in some in the fæces; whereas in other cases no such organism has been found. Whatever be the conditions necessary for this compound of hæmoglobin to be formed in the blood, they can very rarely be fulfilled, for the malady is decidedly uncommon. If it be an infective disease, it is remarkable that the cases should be so few and so widely scattered, which would suggest that the bacillus in entering the human organism had missed its true vocation.

Another example of a rare malady which presents important unsolved problems is chloroma. A great advance was made when it was recognised that the remarkable green tumours, with their curious distribution, were associated with a form of leukæmia. The clinical picture, the tumours upon the skull, and the exophthalmos caused by tumours in the orbits, might be described as characteristic of chloroma were not a practically identical picture presented in cases of left malignant hypernephroma. The two diseases have only this in common; the similarity depends upon the distribution and not on the nature of the lesions, and the distribution is apparently due to spread along lymphatic channels and the thoracic duct. We do not know why tumours, with such distribution, should develop in this variety of leukæmia and the nature and origin of the highly unstable pigment which imparts to them their green colour is still obscure. It certainly is not a bile pigment, and is more like a lipochrome; but as I can testify, the investigation of it is beset with great difficulties.

I should have liked, had time permitted, to have spoken of that malady involving the bone-marrow, of which the copious excretion of the Bence Jones protein is a diagnostic sign, for it is one of the most obscure of rare diseases. Again that weird mixture of infantilism and premature senility which Hastings Gilford described under the name of "progeria," and the developmental anomalies of bony structures, of which achondroplasia, oxycephaly, and hypertelorism may be cited as examples, have not yet revealed their secrets, but may be expected to repay investigation in course of time.

It would be easy to mention many other conditions which offer like problems; but I do not think that it is necessary to adduce any more examples to prove my point. Those which have been chosen may be looked upon as representative. They have been selected from widely different regions of the province of medicine, and, for the most part, have nothing in common save their rarity and their instructiveness. Yet all of them, to quote Paget once more, "have that kind of attraction which belongs to everything which excites wonder," and each brings its particular contributions to the sum of knowledge. All alike tend to prove the truth of Harvey's dictum, that "Nature is nowhere accustomed more openly to display her secret mysteries than in cases where she shows traces of her workings apart from the beaten path."

We may feel sure that, in the future as in the past, there will be many who will try to solve the problems of the commoner diseases, the control of which is of such vital interest to the community at large. Let us hope that there will always be some who will seek to guess the riddles and to learn the lessons of the rarer maladies.

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(*Continued at foot of next page.*)

RELAPSES IN SCARLET FEVER.

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During the past 21 months all cases of scarlet fever admitted to the Ilford Isolation Hospital (432 in number) have been treated with concentrated scarlet fever antitoxin. We propose at a later date to analyse the results which have thus been obtained. For some time we have observed that the occurrence of true relapses of scarlet fever appeared to be more frequent (the percentage relapse rate on the 432 cases was 4·16) and therefore it was decided to apply the Dick test to: (1) all scarlet fever patients in the wards on a certain date; (2) all these cases at weekly intervals; and (3) all new cases on admission and at weekly intervals after their admission.

The text-books give the impression that true relapses in scarlet fever are very rare and of little practical importance. In some of the books confusion appears to exist in the figures, and insufficient attention appears to have been paid as to whether or not the patient had a typical attack of scarlet fever on admission. As a matter of fact relapses are of considerable administrative importance. When a relapse occurs the general practitioner is often blamed for sending a patient into an isolation hospital only to contract scarlet fever there, when in fact his original diagnosis was a correct one and a relapse of the disease has occurred. The percentage of relapses given by various authors is as follows: Scholes (Melbourne), 0·35 per cent.; Rolleston, 1 per cent.; Ker, 1 per cent.; Caiger, 1·1 per cent.; Goodall, 1·53 per cent.; Ker and Rundle. 2 per cent.; while Box quotes figures varying from 0·5 to 7 per cent.

It would appear from this that a true relapse-rate of between 1 and 2 per cent. might be taken as a fair average; the 7 per cent. rate quoted by Box probably includes cases which cannot come under the definition of true relapses.

Table A shows the relapse percentage-rate in 13 hospitals of the Metropolitan Asylums Board during 1914, calculated from the figures supplied in the M.A.B. report for that year. Those hospitals which are marked with an asterisk received large numbers of transfers of convalescent cases from other hospitals. In view of the conclusions which we have come to as regards the causation of a relapse in scarlet fever it is interesting to note that the relapse-rate in these three hospitals is considerably higher than in the others.

Table A.

1	2	3	4	5	6	7	8	9	10	11	12	13
0·56	0·71	0·13	1·1	0·51	1·3	0·50	0·0	1·1	2·0*	0·0	1·5*	1·4*

In 1891 Boddie[1] brought a communication before the Medico-Chirurgical Society of Edinburgh, describing two home-nursed cases of scarlet fever, which had relapsed. These have been quoted as cases of auto-infection, but it is not clear, on reading the cases, that reinfection could be entirely excluded.

In the discussion which followed, some speake held the view that relapses occurred only during t second and third week. This is not the view n generally held, and probably the so-called relaps which took place at these periods were really prima attacks. True relapses are very uncommon bef the fourth or fifth week. Boddie, in a review the literature of the subject, mentioned that so writers described relapses and "pseudo-relapses It would seem probable, however, that the latter a due to some intercurrent infection, such as rubel If relapses occur in home-nursed cases of scarl fever they must be extremely rare, for Dr. D. Kirkhope, M.O.H. for Tottenham, whose experien in nursing cases of scarlet fever at home is probab unique, has informed us that between April, 192 and December, 1927, 2383 cases of scarlet fever h been treated at home at Tottenham and in no instan had there been a relapse.

Dick Tests in Acute Cases of Scarlet Fever.

For the purpose of this article the term "relapse is taken to mean a repetition of the attack, includi rise of temperature, punctate erythema, congest fauces and peeling tongue, occurring during t convalescence of a patient from a primary atta of scarlet fever. This investigation has been ma as an aid to the elucidation of the problem and t relationship of relapses to immunity in the disea The Dick test was performed in 93 consecutive cas and the results of the tests compared with those later dates. The whole series were given 10 c.c of concentrated scarlet fever antitoxin serum int muscularly on admission, with the exception of th cases, one of which received 5 c.cm., one 10 c.c (and a further 10 c.cm. when the relapse occurre and a third 20 c.cm. New cases admitted after t investigation commenced were given the serum fo hours after the Dick test was done. The test w read at the end of 24 hours, a definite erythema ¼ in. or over being read as "positive," and t results classified as: (*a*) negative, no erythema; erythema of ¼ in.–½ in.; (*c*) erythema, ½ in. or over.

Table I.—*Results of Dick Test in 93 Serum-treate Cases of Scarlet Fever.*

Day from onset of rash.	No. of cases.	Percentage negative.	Percentage positive.		
			¼–½ in.	½ in. and over.	Tota
1–3	41	9·7	49·0	41·3	90·
4–7	8	62·5	12·5	25·0	37·
8–10	37	89·2	5·4	5·4	10·
11–14	15	66·8	26·6	6·6	33·
3rd week ..	52	71·7	25·0	13·3	28·
4th ,, ..	52	57·7	15·4	26·9	42·
5th ,, ..	43	67·4	16·3	16·3	32·
6th ,, ..	32	65·7	15·6	18·7	34·
Over 6 weeks	63	62·0	9·5	28·5	38·
—	341	—	—	—	—

Period 1–3 and 4–7 days do not include cases which d received serum before the Dick test was done (four case negative Dick test). Other periods: All cases had recei d serum at some time previously.

Indefinite results	8
Results obscured by rash	5
Results during, and following, relapses:	
Obscured	1
Negative	27
Positive (erythema ¼–½ in.)	2
Positive (erythema ½ in. and over)	13
Total Dick tests performed—Table I.	341
Other	60

In Table I. the results are summarised, and he following points in this table are worthy of comme :

(*a*) The high percentage of positive results in he first three days. (*b*) The sudden fall in the numer

Lessons of Rare Maladies.

(*References continued from previous page.*)

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f positive results in the period from the eighth to he tenth day, due, of course, to the passive immunity roduced by the injection of scarlatinal antitoxin. c) The rise in the number of positive results ntil the third week. (e) The fall in the number f positive results in the fifth and sixth weeks. No ases of scarlet fever are included which were admitted uring the desquamating stage or during convaescence. All the cases were typical cases of acute carlet fever on admission to the hospital.

TABLE II.—*Comparison of Results of Dick Tests in Scarlet Fever Patients.*

Day of disease.	Benson and Simpson.[4]	Ker, McCartney, and McGarrity.[5]	Taylor, Smith, and Kinloch.[6]
	Number of patients tested and positive percentages.		
	50	441	170
-3 days ..	50 (100)	23 (73·9)	98 (79·5)
-6 ,, ..	—	103 (58·2)	54 (51·8)
-14 ,, ..	—	78 (24·3)	18 (27·7)
cd week ..	50 (48)	68 (23·5)	—
th ,, ..		44 (9·0)	158 (14·0)
th ,, ..		60 (16·6)	—
th ,, ..	—	24 (4·1)	—
ver 6 weeks	—	41 (7·3)	—

Table II. gives a comparison with the results of ther workers. It will be noticed that whereas the erum-treated cases showed a percentage of strongly)ick-positive results during the third, fourth, fifth, nd sixth weeks of 13·3, 26·9, 16·3, and 18·7, the on-serum treated cases showed a much less number f strongly positive results.

Okell and Parish,[2] in testing 120 convalescent carlet fever patients, and reckoning all reactions as ositive, found that 18 per cent. of convalescent atients give a Dick-positive reaction. It will be bserved from Table I. that the serum-treated cases howed a much higher percentage than this. Okell and 'arish found it difficult to explain the results which hey had obtained, and gave four explanations: (*a*) hat the present methods of diagnosis are not wholly atisfactory; (*b*) that patients who have had scarlet ever do not necessarily become immune to the toxin r become so, in some cases, very slowly; (*c*) that trains of scarlet fever streptococcus may produce iore than one toxin; (*d*) that the test is not a true ndication of susceptibility to scarlet fever. On the 'hole, they were inclined to consider that (*b*) was the robable explanation. O'Brien[3] has suggested that)ick-positive reactors during convalescence from carlet fever may have cured themselves of their ever by producing antitoxin which is still locked up ntracellularly, and that the cells are slow to excrete he antitoxin into the blood stream. We would uggest, however, that the Dick-positive reactors in onvalescent scarlet fever cases are persons who have ailed to develop immunity.

It will be noticed in Tables I. and II. that the establshment of immunity in scarlet fever does not follow straight line. It has been suggested by O'Brien hat the use of antitoxic serum may delay the evelopment of immunity during convalescence. Ve would go further than this, however, and state hat, according to the results given above, in certain ndividuals immunity does not develop at all. In 'able B are given examples showing failure in the evelopment of immunity in cases other than those vhich showed a relapse.

This variability in the individual immunity produced by an attack of scarlet fever may depend upon ither: (*a*) the virulence or type of the primary nfecting *Streptococcus scarlatinæ*; (*b*) the individual ower of resistance to this type of antigen; or (*c*) he interference with the formation of antitoxin by he patient's own cells, caused by the initial adminisration of antitoxic serum.

TABLE B.

Case No.	Sex.	Age in years.	Day of test.	Result of Dick test.	Case No.	Sex.	Age in years.	Day of test.	Result of Dick test.
17	M	5	17	Positive.	55	F	7	2	Positive.
			24	,,				8	,, 1½ in.
			31	,,				17	,, 1 in.
			41*	,, ½ in.				24	,, ¾ in.
			48	,, ½ in.				31	,, 1 in.
			55	Indefinite.					
			62	Positive.	59	F	3 7/12	1	Negative
24	M	7½	29	,, 1 in.				8	Positive, ½ in.
			36	,, 1 in.				15	,,
			44	,,				22	,, ½ in.
34	M	8	2	Negative.				29	,,
			9	,,				36	,,
			16	,,	67	M	—	4	Positive, 1 in.
			23	Positive, ½ in.				11	Negative.
			30	,, ¼ in.				18	,,
			37	Indefinite.				25	,,
			44	Positive, 1 in.				32	Positive, 1 in.
			45	,, 1 in.				33	,, ¾ in.
36	M	5	2	Positive.	73	M	2 9/12	2	Positive, ½ in.
			9	Negative.				9	Negative.
			16	Positive, 1 in.				16	Positive, ½ in.
			23	,, 1 in.				23	,, ½ in.
			30	,, ¼ in.					
			37	,, ½ in.					
			44	,, 1 in.					

* Repeat test.

We append below particulars of the 18 true relapses which occurred at the Ilford Isolation Hospital in the 432 cases reviewed. (Table III.)

It is notable that:—

1. The majority of relapses occurred in young children. Whether this fact is of any practical importance or not cannot be stated, as the greater proportion of the cases admitted to hospital occurred during childhood.

2. Only 6 complications developed after the primary attack in these cases compared with 23 complications which occurred after the relapses.

3. The majority of the patients were up and in the convalescent ward at the time of the relapse.

4. Thirteen of the relapses took place between the twenty-second and fifty-first day. Only one occurred before the beginning of the fourth week.

5. The Dick test was found in four cases to be negative at various periods after the relapse and to remain negative. In three cases it was positive before and after the relapse. In one case the immunity varied after the relapse.

A short account of two cases (13 and 16) is not without interest, as the Dick test was strongly positive before the relapse in both cases.

Case 13 was a girl aged 8, who was admitted with a well-marked attack of scarlet fever, strawberry tongue, and some rhinitis. Nasal swabs were taken which were negative for the Klebs-Löffler bacillus. The temperature was 103·6° on admission. She was given 10 c.cm. of scarlatinal serum. She developed slight cervical adenitis and, in view of the nasal discharge, was nursed by the "barrier" system. At the end of the third month of her stay in hospital the Dick test was positive for three consecutive weeks. Her rhinitis having cleared up, the "barrier" was discontinued, and she was allowed to be up in the convalescent ward. It was decided, however, in view of the persistent Dick-positive result, to give her a further injection of scarlatinal serum to induce a more prolonged immunity. This was done, but too late to prevent a relapse, because in the afternoon of the same day that the serum was administered she developed the typical scarlet fever rash, temperature of 99·8°, and later a strawberry tongue. In fact, when the serum was given she showed signs of a commencing relapse. Five days after this attack her Dick test was negative, and a week later it was again negative. For three subsequent weeks after this the Dick test was positive; on the last occasion an erythema of 1½ in. was noted, showing that she had again failed to develop natural immunity to scarlet fever. The existence of persons of this kind was recognised many years ago by Foord Caiger, who described one young woman who had three distinct attacks of scarlet fever within a period of three months, in the last of which she died.

Case 16 was a boy aged 7, who was admitted with a typical attack of scarlet fever, temperature 101°, and was

given 10 c.cm. of scarlatinal serum on admission. A fortnight after this the Dick test was positive, although the patient was desquamating freely, and it remained positive for three weeks. During this period the boy was being nursed in a side ward and strictly "barriered." At the end of this period he had to be removed into the main ward, where he was still "barriered," but seven days later he developed a typical scarlet fever rash, with a temperature of 103·6° and strawberry tongue. The Dick test showed pallor over the previous positive area. On three consecutive weeks following the relapse the Dick test was negative,

Conclusions.

1. It is necessary to Dick test cases of scarlet fever admitted to an isolation hospital if relapses are to be avoided. In view of the fact that relapses are uncommon before the fourth week, it would appear that a Dick test should be performed at the end of the third week after admission to hospital.

2. It is unjustifiable to retain cases of scarlet fever in a general ward who give a marked Dick-

TABLE III.—RELAPSES IN SCARLET FEVER—ILFORD ISOLATION HOSPITAL.

No.	Sex.	Age.	Day of admission.	Complications before relapse.	Environment before relapse.	Day of relapse.	Complications after relapse.	Remarks.
1	M.	13	1st	(Dermatitis.)	Up. con. ward.	49th	Rheumatism, albumin. (Urticaria.)	Relapse. Medium eruption Congested throat. T., 99·0° P., 100.
2	M.	6	1st	Nil.	,,	37th	Adenitis.	Relapse. Marked erup. T. 100·4°; P., 122.
3	M.	3	1st	Rhinitis.	,,	29th	Adenitis, otorrhœa.	Relapse. Med. erup. Typica tongue. Cong. throat. T. 100·2°; P., 128.
4	M.	1 1/12	3rd	Otorrhœa, 9th day.	,,	49th	Adenitis, rhinitis.	Relapse. Marked erup. T., 99·4° P., 130. Tongue peeled.
5	M.	14	3rd	Nil.	,,	35th	Quinsy, albuminuria.	Relapse; vomiting; marke erup. Cong. fauces. T. 103·2°; P., 110.
6	M.	5 6/12	2nd	Otitis media, 7th day.	,,	35th	Adenitis, rhinorrhœa.	Relapse. Marked erup. Cong throat. T., 98°; P., 132.
7	F.	5 3/12	2nd	(Varicella.)	,,	48th	None.	Relapse. Marked erup. Tongue strawberry. T., 100·2° P., 120.
8	F.	6 6/12	2nd	None.	,,	29th	Adenitis.	Relapse. Med. erup. T., 99·4° P., 96.
9	F.	6 6/12	4th	Rhinorrhœa, 32nd day.	Up. main ward.	51st	Adenitis, rhinorrhœa.	Relapse. Med. erup. T., 101·2° P., 132.
10	F.	5	2nd	None.	Bed. gen. ward.	22nd	Onychia.	Relapse. Marked erup. T., 101° P., 96.
11	M.	7 10/12	2nd	,,	Up. con. ward.	49th	Adenitis.	Relapse. Marked erup. Cong throat. T., 98·6°; P., 100.
12	F.	10	1st	,,	,,	40th	Rhinitis.	Relapse. Marked gen. erup T., 100·6°; P., 108.
13	F.	8	2nd	Cervical adenitis.	,,	95th	None.	Relapse. Faint erup. Punctat erythema palate. Strawberr tongue. T., 99·8°; P., 12(
14	M.	5	4th	None.	,,	33rd	Nephritis, adenitis, rhinitis.	Relapse. Bright gen. erup Tongue peeling. T., 102° P., 130. Schultz Charlto positive.
15	M.	2 8/12	3rd	,,	,,	25th	Adenitis, otitis media.	Relapse. Marked erup. Cong throat. Adenitis. T., 100·4° P., 128.
16	M.	7	1st	,,	Gen. ward.*	30th	Adenitis.	Relapse. Marked erup. Cong throat. Tongue strawberry T., 103·6°; P., 120.
17	F.	5	4th	,,	Up. con. ward.	50th	None.	Relapse. Marked erup. Fauce cong. T., 99·4°; P., 120.
18	M.	8	1st	Otorrhœa.	Bed. gen. ward.	20th	,,	Relapse. Faint erup. Typic tongue. Cong. throat; cer adenitis. T., 101·8°; P. 12

* See notes on case.

showing that this boy had apparently now developed active immunity to scarlet fever. Following this, however, the boy gave a Dick-positive reaction in the two succeeding weeks. He belonged apparently to the same class as Case 13, his immunity being of a fleeting character.

Gunn, in the M.A.B. Report for 1926–27, states that not infrequently a patient suffering from a mild attack of scarlet fever may still have weakly positive or doubtful Dick reaction at the end of six or seven weeks and that, while most of the cases were discharged in this state, in some few instances they developed a second attack of scarlet fever and subsequently became completely negative Dick reactors. He associates himself with the view that reinfection with a different strain of scarlatinal streptococcus is the cause of the relapse. There does not, however, appear to be any evidence for this, and a true relapse appears to be due to an insufficient immunity conferred by the original attack. The two cases which have been quoted in some detail substantiate this view of the question.

Zingher, out of 232 patients, found that only 8·7 per cent. gave a positive Dick reaction during convalescence from scarlet fever.[7] It is well known that Zingher found a higher percentage of positive results in the first few days of the disease than other workers have done.[8] This is due to the fact, however, that he included as positive results all grades of reaction, as will be seen from his original paper.

positive reaction during their convalescence. Suc cases should be either (*a*) treated in separation wards or (*b*) immunised during the rest of their stay i hospital, or (*c*) isolated at home for the remainder c their convalescence.

3. Scarlatinal serum appears to have the definit effect of increasing the number of Dick-positiv reactors during convalescence, and in any hospita in which the serum is given on a large scale the step mentioned in 1 and 2 are most important.

4. There appears to be a definite class of individual whose blood is unresponsive to the toxin of scarle fever in the production of antitoxin, and while suc cases recover from a mild attack of scarlet feve they are liable to a relapse or to have two or mo attacks. It will be an interesting point to investigat whether certain patients who have had scarlet feve and who are insusceptible to its toxin are sti susceptible to the local bacterial action of th streptococcus, as, from the work of Kinloch, Smit and Taylor, appears to be the case in persons wh have been immunised by scarlet fever toxin. If th is so it would explain the late septic complicatio of scarlet fever, particularly rhinitis, which is suc a frequent cause of the prolonged stay of patien or, if they are discharged too early, the productic of return cases.

5. The results emphasise again the necessity convalescent wards. Altnough most of the relaps

ecorded occurred in convalescent wards, there is o doubt that if the cases had been treated in conunction with acute cases throughout their illness ne number of relapses would have been markedly ncreased. We are investigating this point further. wabs from the throats of 21 patients in a convalescent ard showed that one patient was carrying *Streptoccus scarlatinæ*, type 2, 30 days after onset of tack and was still a carrier when tested after scharge from hospital 12 days later.

6. Relapses in scarlet fever are primarily due to ck of immunity in a patient. A relapse may be used in such patients either: (*a*) by an autofection from the virus still present in the patient's ody, as suggested by Caiger, or (*b*) by cross-infection ith the same type of *Streptococcus scarlatinæ* as iginally infected the patient, or (*c*) by cross-infection ith another type of *Streptococcus scarlatinæ*.

There are a considerable proportion of Dick-positive reactors during convalescence from scarlet fever and a number of these reactors relapse. Relapse does not, as a rule, occur until the fourth week, and it would appear that in the majority of cases the explanation (*b*) is the most probable one.

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NVESTIGATION OF A SERIES OF CASES OF SECONDARY ANÆMIA

TREATED WITH LIVER OR LIVER EXTRACT.

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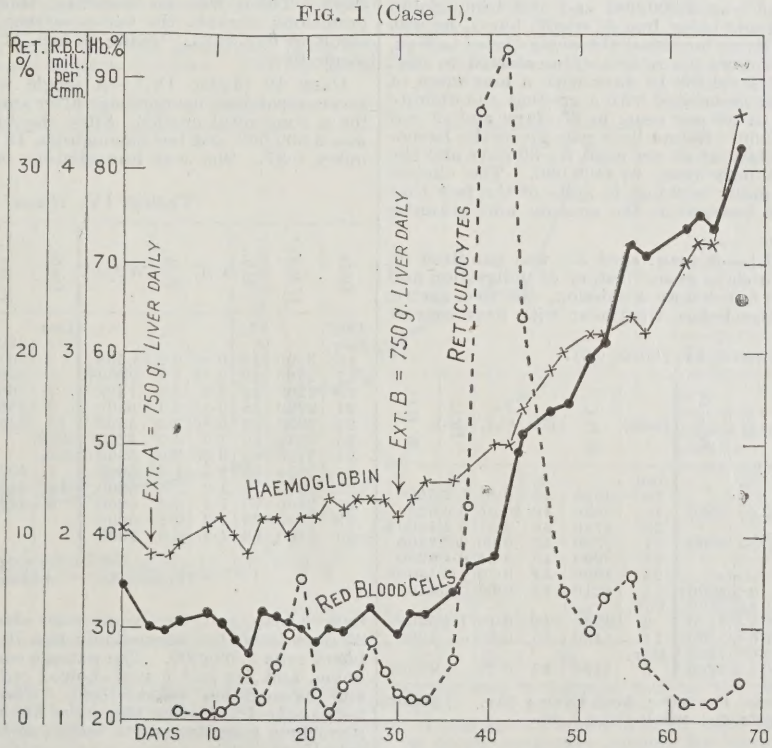
SINCE Minot and Murphy published in 1926 their st paper on the liver treatment of pernicious æmia all additional evidence has strengthened tneir aim to have found in liver or liver extract a rapid eans of combating this disease. The position as gards secondary anæmias is, however, far less clear. ery few cases have been published [1] and in no case ave full details been given. The general consensus opinion seems to be that liver is only useful in rnicious anæmia. This is surprising in view of the ct that the mediate cause the application of a liver et to pericious anæmia as the starting result btained by Whipple [2] in so eating secondry anæmia exerimentally roduced in ogs.

A series of ses recently vestigated at niversity College Hospital ggests that, at ny rate in cerin types of econdary æmia, liver, ther whole or the form of xtract, may be efinitely valuble. The cases ll into three oups: (1) pericious anæmia; 2) anæmia econdary to æmorrhage; 3) anæmias ssociated with rcinoma, and anæmias of unknown origin unssociated with any apparent hæmorrhage.

The 13 cases of pernicious anæmia have been briefly mmarised [3] and a full report of them will appear later. Five were treated with liver extracts and the response to these was by no means uniform, as in the following instance:—

CASE 1.—Typical clinical and pathological findings. The patient was given extract A, equivalent to 750 g. of fresh liver a day, for 12 days. There was no response and the dose was increased to an equivalent of 1250 g. a day for six days, again with no result. Extract B in a dose equivalent to 750 g. was then given, and five days afterwards the reticulocytes started to rise, reaching a maximum of 36 per cent. on the eighth day. Twenty-six days later the red cell count had risen from 1,740,000 to 4,130,000 and the hæmoglobin from 41 per cent. to 86 per cent. (Fig. 1).

FIG. 1 (Case 1).



The remaining eight cases of pernicious anæmia were treated with whole liver and the results bore out the claims of other investigators as to the general improvement in the blood picture. Nevertheless this still presented a few abnormal features. The colour-index, in all but two cases, remained above 1, and in the early stages of improvement an index as high as 1·4 was found so often as to be almost typical. This cannot in any way be associated with the iron content of the liver as it was found in cases treated with extract as well as in those on whole liver. The leucopenia was persistent in those cases in which it was originally present. Three out of the 13 cases showed a lag in reaction, for which no reason appeared except in Case 5, where there was a negative indirect van den Bergh reaction at the start. Two of Fraser's [4] non-reacting cases also showed a negative indirect van den Bergh reaction. One of them died and the post-mortem findings were compatible with a diagnosis of pernicious anæmia; which controverts Minot's suggestion that cases which do not show a prompt response are not pernicious anæmia. The improvement in the subjective symptoms of shooting pain and tingling has been

definitely associated with a change to a far more genial outlook on life.

Anæmia Secondary to Hæmorrhage.

Two cases of secondary anæmia due to hæmorrhage were treated with extract. One was given both liver and extract and four took whole liver.

CASE 14.—A man, aged 34, was admitted on Jan. 23rd, 1928; he had a gastric ulcer and had twice vomited a pint of blood, 16 days and again four days before admission. On Feb. 21st the stools were free of occult blood and thereafter he was given 8 oz. of whole liver daily for 25 days. The hæmoglobin remained steady at 50 per cent.; the red blood cells rose from 3,080,000 to 4,100,000, in contrast with a rise of only 200,000 in the 29 days before liver was given. There was never any reticulocyte response. Clinically his condition improved and he gained weight.

CASE 15 (Table I., Fig. 2).—A married man, aged 49, was admitted on Jan. 3rd, 1928, after three attacks of hæmorrhage in the preceding three weeks due to a gastric ulcer. Red blood count 1,800,000; hæmoglobin, 28 per cent.; colour-index, 0·77. A month later, on ordinary treatment,

TABLE I. (*Case 15*).

Date, 1928.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.	Date, 1928.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.
Jan.		%		%		Feb.		%		%	
3	1800	28	0·77	—	6000	13	2860	40	0·73	7·2	5300
Feb.						14	2780	42	0·77	7·4	5700
2	2200	30	0·68	1·2	5100†	15	2980	46	0·79	9·0	—
3	2200	30	0·68	1·2	4400	16	3010	44	0·73	4·8	4600
4	2280	34	0·77	1·4	4400‡	17	3080	—	—	6·8	4600
6	2330	31	0·71	1·4	4800	20	3200	50	0·78	3·6	4600
7	2570	34	0·69	2·2	4600	23	3360	50	0·69	3·2	4600
8	2800	40	0·73	5·2	5500	28	3930	54	0·69	1·4	4600
9	2740	38	0·70	6·6	6600	Mar.					
10	2770	38	0·70	4·8	5700	5	4380	58	0·67	2·4	5500
11	2740	37	0·68	6·2	3700	7	4180	58	0·70	1·4	7000

* Thousands. † Liver 4 oz. a day. ‡ Liver 8 oz. a day. C.I. = Colour-index.

the red blood count was 2,200,000 and the hæmoglobin 30 per cent. The stools being free of occult blood, he was given 4 oz. of whole liver, increased three days later to 8 oz. At the end of seven days his reticulocytes started to rise, maintaining a raised level for 18 days with a maximum of 9 per cent. This was associated with a gradual and definite rise in hæmoglobin to 58 per cent. in 33 days and of red blood cells to 4,180,000. Before liver was given the hæmoglobin had been constant at 30 per cent. for 30 days and the red blood cells had only risen by 400,000. The clinical improvement was equally striking, in spite of the fact that tubercle bacilli were present in the sputum and granular casts in the urine.

CASE 16 (Table II.).—A man, aged 35, was admitted on Jan. 27th, 1927, with eight years' history of indigestion and hæmatemesis on the day before admission, due to a gastric ulcer. In the 33 days before treatment with liver extract

TABLE II. (*Case 16*).

Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.	Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.
1927.		%		%		Jan.		%		%	
Nov.						16	3540	40	0·57	0·2	5500
29	1370	20	0·74	—	5500	18	3680	40	0·55	0·6	6200
Dec.						20	3740	38	0·51	0·2	4500‡
24	2600	30	0·54	—	5000	21	3530	42	0·60	0·2	2400
1928.						24	3900	40	0·51	0·4	6200
Jan.						28	4000	44	0·50	1·8	5300
4	3000	30	0·5	0·2	2000†	31	4210	42	0·50	0·4	4400
5	3000	28	0·46	2·0	3100	Feb.					
6	2960	26	0·45	1·8	2400	3	4300	44	0·49	1·4	5400
7	3250	30	0·46	0·6	2800	21	4400	60	0·68	—	4000
10	3280	34	0·43	0·6	4400	Mar.					
14	3170	36	0·58	0·2	3700	5	5490	68	0·68	—	4800

* Thousands. † Extract C = 500 g. fresh liver a day. ‡ Taken off extract; whole liver 8 oz..

his hæmoglobin rose from 20 to 30 per cent. and his red blood cells from 1,370,000 to 3,000,000. He had had iron and arsenic for 18 days. He was then given extract C, in a dose equivalent to 500 g. fresh liver, for 16 days. His hæmoglobin went up to 40 per cent. and his red cells to 3,700,000. Eight ounces of whole liver were then substituted for the extract, and in a further period of 15 days his hæmoglob rose to 44 per cent. and his red blood cells to 4,200,00 He at once began to gain weight and put on 9 lb. in a fo night. He has continued to eat liver at home, and his la count, on March 5th, showed 5,440,000 red blood cells a hæmoglobin 68 per cent.

CASE 17 (Table III., Fig. 3).—A man, aged 49, was admitt on Dec. 16th, 1927, with a long gastric history includi hæmatemesis due to a duodenal ulcer three days befor In the 25 days after admission, although he had had arsen for the last 12 days, his hæmoglobin only rose from 46

TABLE III. (*Case 17*).

Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.	Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.
1927.		%		%		Jan.		%		%	
Dec.						14	3500	54	0·77	0·0	6000
16	2840	46	0·82	—	3520	16	4060	60	0·75	0·6	9000
1928.						17	4080	58	0·72	0·0	10,000
Jan.						18	4050	58	0·72	0·4	6800
7	2800	50	0·86	—	3500	19	3730	54	0·72	0·8	3500
9	2860	50	0·86	0·2	3500†	20	3700	58	0·78	0·0	8000
10	2860	50	0·86	—	3500	21	4060	60	0·74	0·0	4100
11	3010	50	0·80	—	2400	23	4050	62	0·77	0·0	4400
12	3730	54	0·72	0·2	3000	24	3900	64	0·82	0·4	3300
13	3520	54	0·77	—	2700	26	4100	62	0·74	0·6	8100

* Thousands. † Extract E = 472 g. fresh liver. ‡ Taken off extra

50 per cent. and his red cell count was unaltered. He w then given a dose of a non-commercial extract (E) equivale to 472 g. of fresh liver a day. In 16 days his hæmoglob rose to 64 per cent. and his red blood cells from 2,800,0 to 4,100,000, a striking increase of over 1,000,000 compar to the preceding period when there was no alteratic There was no increase in the reticulocytes.

CASE 18.—A man, aged 32, with a gastric ulcer, w admitted on Feb. 20th, 1928; he had brought up a pint blood 12 weeks previously. In the 18 days after admissi his red cell count had only risen by 300,000 and his hæm globin had remained stationary. He was given a dose extract C equivalent to 750 g. of fresh liver daily for sev days. There was no response, though in two cases pernicious anæmia the same extract has given a defin result in five days. Owing to lack of extract he is now whole liver.

CASE 19 (Table IV.).—A single woman, aged 24, h severe secondary hæmorrhage after amputation of the cer for a congenital erosion. After the bleeding her red cou was 2,360,000 and her hæmoglobin 48 per cent., and colo index 0·87. She was immediately put on 8 oz. of wh

TABLE IV. (*Case 19*).

Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.C.	Date.	R.B.C.*	Hb.	C.I.	Ret.	W.B.
1927		%		%		Dec.		%		%	
Nov.						1	3200	70	1·1	0·4	920
16	2800	48	0·85	0·2	13,500	2	3070	72	1·2	1·0	620
17	2360	40	0·87	1·2	9000†	5	3290	74	1·15	1·2	730
19	2200	44	1·0	2·8	7100	7	3600	76	1·04	—	500
21	2780	48	0·85	2·4	6400	9	3560	76	1·0	1·4	640
22	2930	52	0·89	3·6	5400	12	3560	76	1·0	0·4	530
23	2830	60	1·0	0·2	4200	1928					
24	3100	60	0·96	2·0	5300	Jan.					
25	2870	66	1·1	1·8	5800	4	4020	80	1·0	·02	660
26	2970	70	1·2	2·8	6200	11	4440	84	0·94	—	770
28	2800	70	1·2	3·4	6200	8	4440	84	0·94	—	660
29	2800	70	1·2	0·2	8000						
30	2500	68	1·3	0·8	7000						

* Thousands. † Liver 8 oz.

liver a day and her count rose steadily. On discha 25 days later, her hæmoglobin was 76 per cent. and her blood cells 3,560,000. The patient continued to eat live home, and her last count showed red blood cells 4,900, and hæmoglobin 86 per cent. Though the colour-in was above 1 for some time, the films in no way sugges pernicious anæmia, and a test-meal showed normal gas secretion.

CASE 20.—A married woman, aged 39, had bilat general thrombosis and constant pyrexia after a p hysterectomy for severe menorrhagia. She was anæn red blood count 2,800,000, hæmoglobin 34 per cent., colour-index 0·55. During this period she was put

oz. of whole liver, which she took well for 20 days, but ithout response.

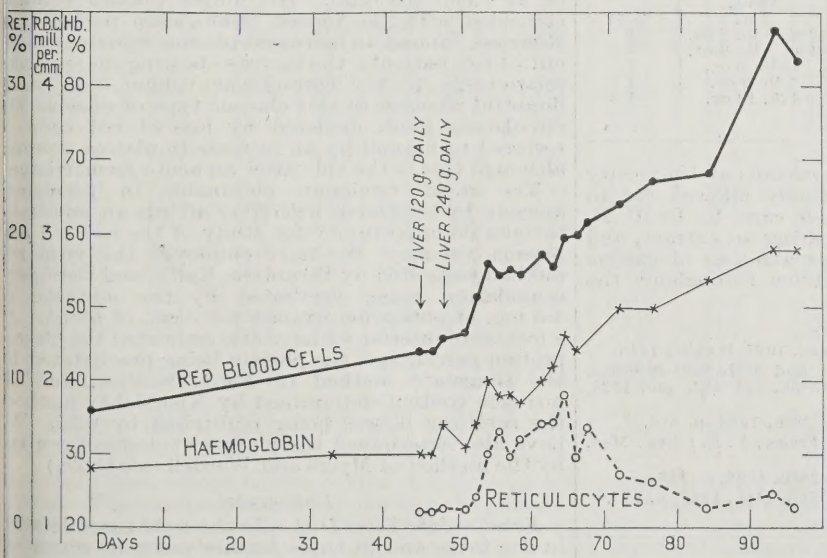
In none of the five gastric cases was there any omplaint of pain or discomfort on taking the whole ver or extract, as might perhaps have been expected om patients taking as much as 8 oz. of meat one ionth after hæmorrhage. Fractional test-meals on normal individual, comparing a plain milk meal ith a milk meal containing a single dose of extract, owed that the addition of the extract made no ppreciable alteration in the acid secreted. There eems therefore to be no contra-indication to treating astric cases in this way. The results in Cases 15 and 7 are striking. In the first there was an increase of 8 per cent. in the hæmoglobin and an increase in the ed cells of 2,000,000 in 33 days, as compared with n increase of 400,000 in the month before liver was iven. In the second there was an increase of over ,000,000 in the red cells, compared with complete bsence of reaction before extract was given, while he hæmoglobin went up by 14 per cent. (see Fig. 3). his marked response shows that improvement in econdary anæmias is not due to the iron content of ver, as the extract is free from iron. A point of articular importance is the reticular rise in Case 15, s this has hitherto been considered peculiar to the esponse of pernicious anæmia. The fact that the other ases started at a level above 3,000,000 may explain ne absence of increase in the reticular count, as the eticulocyte crisis is less marked in cases of pernicious næmia starting treatment at this height. It is erhaps not fair to claim Case 19 as a success, since o long control period was allowed before starting eatment. It has been reported, however, because shows that there may be considerable increase in one-marrow activity without any appreciable lteration in the reticular count.

Anæmias Unassociated with Hæmorrhage.

The following five cases do not fall conveniently nto any group, but seem worth recording to supple- ient the scanty data at present available of the effect f liver in such conditions.

CASE 21.—A man, aged 55, with aleukæmic lymphatic eukæmia. Wassermann reaction positive. Van den Bergh

FIG. 2 (Case 15).

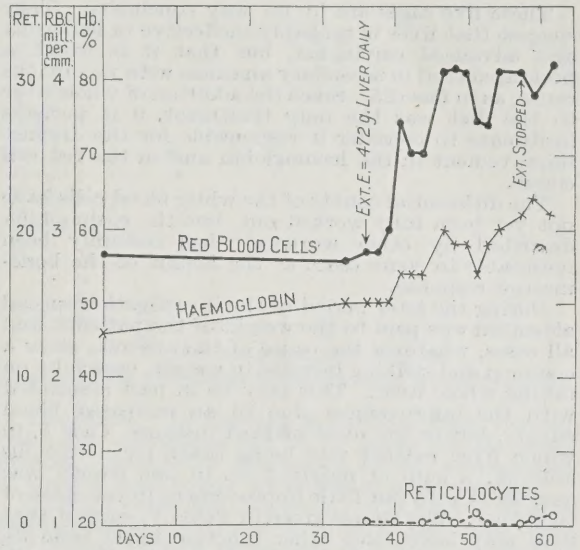


ndirect reaction positive. Total achlorhydria. Blood film howed anisocytosis with an increase in size of the red ells compatible with pernicious anæmia. Red cells, ,990,000; hæmoglobin, 62 per cent.; colour-index, 1·02. White blood cells, 7000; lymphocytes, 88·5 per cent. As diagnosis of pernicious anæmia was at first thought possible e was given extract D in doses equivalent to 750 g. of fresh iver for 13 days. There was no appreciable alteration in the æmoglobin or the red cell count, and the white count fell o 1500.

CASE 22.—A case of probable lymphatic leukæmia associated with Bence-Jones albuminuria. Van den Bergh reaction indirect positive. Wassermann reaction negative. Red blood cell count, 1,780,000; hæmoglobin, 30 per cent.; colour-index, 0·88. He was fed on 8 oz. of whole liver daily for a fortnight. There was no response.

CASE 23.—A man, aged 60, with carcinoma of the prostate and secondary deposits in bones. Admitted with

FIG. 3 (Case 17).



a history of increasing anæmia, loss of weight, and indigestion for eight months. He had been treated with whole liver previously, as he was thought to be a case of pernicious anæmia. Wassermann reaction negative. Van den Bergh indirect reaction negative. Total achlorhydria. X rays of the stomach showed no evidence of growth. Red blood cell count, 1,860,000; hæmoglobin, 36 per cent.; colour-index, 1·0. White blood cell count, 5500. Differential white count showed constant presence of myelocytes and the size of the red cells was incompatible with a diagnosis of pernicious anæmia. He was given whole liver for 12 days but the blood picture remained unaltered. Later he was given extract C for 12 days in a dosage equivalent to 500 g. of fresh liver a day. The blood picture remained constant.

CASE 24.—A man, aged 49, was admitted on Jan. 23rd, 1928, with nervous symptoms which at first, in view of his blood count and test-meal result, were thought to be compatible with a rather atypical form of subacute combined degeneration of the cord. Further investigation favoured a diagnosis of syphilitic spastic paraplegia. Wassermann reaction positive. Van den Bergh indirect reaction negative. Total achlorhydria. Red blood cells, 3,900,000; hæmoglobin, 84 per cent.; colour-index, 1·08. White cells, 7700; film compatible with a diagnosis of pernicious anæmia, though in no way striking. He was given 8 oz. of whole liver daily for a fortnight. There was no rise in the red blood cells or the reticulocytes, and a definite fall in the hæmoglobin to 70 per cent.

CASE 25.—A single woman, aged 32, admitted as a case of severe secondary anæmia for investigation. She gave a six years' history of anæmia and weakness, and complained of piles, but no evidence was found on investigation to support this as an explanation of the blood picture. No menorrhagia, no blood in the stools, no source of sepsis detected. Total achlorhydria. Wassermann reaction negative. Positive indirect van den Bergh reaction. Red

blood count, 4,600,000 ; hæmoglobin, 37 per cent. ; colour-index, 0·4. White blood cells, 7000. Films typical of a severe secondary anæmia. She was given 8 oz. of whole liver for 18 days. There was no change in the blood findings and she went home. A month later, having continued the liver diet, she looked and felt much better, and her red blood cell count was 5,830,000, with hæmoglobin 56 per cent. and white blood cells 4800. There was thus an increase of over 1,000,000 red cells and 20 per cent. in the hæmoglobin. Van den Bergh indirect reaction positive.

These five cases are in no way conclusive They suggest that liver is probably ineffective in leukæmia and advanced carcinoma, but that it is worth a prolonged trial in secondary anæmias with no obvious cause, as in Case 25. Since the addition of whole liver to the diet was the only treatment, it is perhaps legitimate to consider it responsible for the distinct improvement in the hæmoglobin and in the red cell count.

The differential counts of the white blood cells have not yet been fully worked out, but the eosinophilia described by other workers[5 6] has certainly been noticeable in some cases at the height of the bone-marrow response.

During the later period of the investigation special attention was paid to the weight of the patients, and all cases, whatever the cause of the anæmia, show a common and striking increase in weight, especially on taking whole liver. This may be in part associated with the improvement due to an increased blood supply, but in the most marked instance, Case 5, in which liver extract was being taken for pernicious anæmia, a gain of nearly 2 st. in one month was associated with but little improvement in the state of the blood. The figures given in Table V. suggest that liver may have some other function apart from its action on blood formation. At any rate it seems worth trial in cases of loss of weight that do not react to the more usual measures.

TABLE V.

Case.	Disease.	Treatment.	Weight gained.	Time in months.
1	Pernicious anæmia.	Extract.	12 lb. 1 oz.	1
2		,,	3 lb. 2 oz.	1
5		Extract and liver.	1 st. 10 lb. 12 oz.	1
9		Whole liver.	2 st.	3–4
12		,,	3 st. 3 lb. 3 oz.	4
13		,,	1 st. 5 lb. 6 oz.	1
14	Secondary anæmia.	,,	15 lb. 6 oz.	1
15		,,	7 lb. 9 oz.	1
16		Extract and whole liver.	8 lb. 13 oz.	1

My thanks are due to the physicians at University College Hospital, who have kindly allowed me to investigate the cases under their care, to Dr. C. R. Harington for his help in preparing an extract, and to Dr. G. W. Goodhart for his analyses of gastric contents and his constant advice throughout the investigation.

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TIDEMILLS MARINE HOSPITAL.—A new wing of this hospital for crippled boys at Bishopstone, Sussex, has been opened by Mrs. Warren, the donor. The extension includes wards, solaria, workshops, playroom, electric and artificial light departments. The hospital is an annexe of the Heritage Craft Schools at Chailey, and is situated on the beach in the bay between Newhaven Harbour and Seaford. The original buildings were the gift of Colonel Warren and had accommodation for 36 crippled boys ; 70 can now be taken.

THE BLOOD AND PLASMA VOLUMES IN PERNICIOUS ANÆMIA.

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WHILE studying the effect of the Minot-Murph liver diet in pernicious anæmia, we have had occasio to estimate the blood and plasma volumes in certai of our patients. Such estimations are of som importance in determining the results of treatment i the anæmias, since changes in the red cell count ma be produced as readily by variations in plasma volum as by actual increases or decreases in the number c circulating red cells. Instances of plasma plethor have been reported in secondary anæmias by Keitl Hartwich and May, and others, and extraordinaril low plasma volumes have been noted in polycythæmia The modern dye methods appear to give consister results in normal subjects. Calculated as cubi centimetres of plasma and blood per kilo of body weight, the following average figures have bee obtained in healthy individuals :—

	Plasma. c.cm.	Blood. c.cm.
Keith, Rowntree, and Geraghty (18 cases)[2]	50	85
Bock (5 cases)[1]	51	82
Seyderhelm and Lampe (11 cases)[4] ..	45	82
Berger and Galehr (30 cases)[5]	45	—

The findings in pernicious anæmia are conflictin Keith [6] gives the results of 19 estimates in 12 case In six of these the plasma ranged from 52–63 c.cn per kilo, the blood from 64–82 ; in the remainir cases high plasma volumes were found (66–81 c.cn per kilo) with blood volumes of 77–106 c.cm. H noted that with an increase in red cells and hæmoglobi there was a tendency for the plasma volume to fal Bock,[3] on the other hand, in seven determinations c seven patients, found an average plasma volume (49 c.cm. per kilo, with an average total blood volun of 57 c.cm. per kilo. His lowest plasma volum coincided with the lowest hæmoglobin percentage Rusynak [7] found an increased plasma volume in eigl out of ten patients, the increase bearing no apparer relationship to the corpuscular volume. It seem doubtful whether in this chronic type of anæmia tl circulatory fluid, depleted by loss of red cells, restored to normal by an increase in plasma volum although this is the rule after an acute hæmorrhage

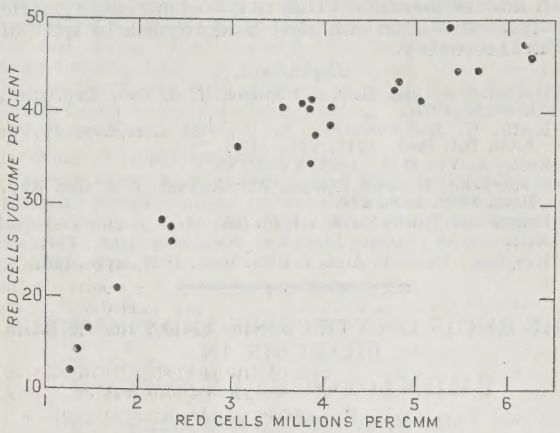
The rapid remission obtainable in pernicio anæmia by treatment with liver affords an unusual favourable opportunity for study of the red cell ar plasma volume. We have employed the vital re method suggested by Rowntree, Keith, and Geraght coagulation being prevented by the addition 1·5 mg. of potassium oxalate per c.cm. of blood. A a matter of interest we have also estimated the plasn protein percentage, the protein being precipitated b the tungstate method of Folin, washed, and i nitrogen content determined by Kjehldahl's metho the resulting figures being multiplied by 6·25. W have also determined the plasma cholesterol conte by the method of Myers and Wardell (see table.)

Comments.

Results of the Liver Diet.—In the eight cases detail in the table and in three further cases in which v made no blood volume determinations the results ha been uniformly satisfactory. The rapidity of t response to treatment has varied, but there w immediate subjective benefit even in one patie whose objective improvement was delayed. T number of cases which we have studied is, howeve small, and in view of the well-known frequency spontaneous remissions and of the fact that none our patients have been under observation for mo

an 11 months we should not be justified in ex-essing any opinion as to the ultimate value of ie treatment. The final red cell counts are higher an those which we have observed by any other ethod of treatment, and the uniform fall in the olour-index may be regarded as a favourable sign. he relationship of cell volume to cell count is shown the accompanying graph, and runs a course similar the colour-index. With the exception of one case l our patients received 6–7 oz. of liver per diem. his patient had been discharged from hospital on senic, but having discovered the value of the liver eatment from a perusal of the daily press he had ken 8 oz. of liver per week at a single meal. On is relatively small allowance his blood presented as tisfactory a picture as any of our more intensively eated patients.

The Plasma and Blood Volumes.—The absolute asma volumes show a considerable degree of nstancy in each patient during the progress of eatment, with a slight tendency to fall during the ter stages of improvement. A definite fall in plasma olume relative to body-weight may occur, but such lls are mainly the reflection of the increase in body-eight which occurs on the liver diet; patients ffering from pernicious anæmia are usually consider-ly below their normal weight when they first come der observation. A considerable gain in weight curred in all our patients with one exception. here appears to be a definite tendency to compensate r the large diminution in the total blood volume, ie to the fall in the red cell volume in this disease, r a corresponding increase in the plasma. The asma volume remains normal. The total quantity circulating fluid is allowed to fall to a low level ring the acuter stages of the malady, and no such tpouring of water from tissues to blood as is seen red cells to a practically constant amount of plasma. The increase in percentage of red cell volume, on centrifuging and in hæmoglobin estimations, gives therefore an accurate index of the actual increase in red cell substance and hæmoglobin during the course of treatment. In drawing deductions from the red cell count allowance has to be made for the well-marked tendency to diminution in the average size of the red cells which accompanies improvement.



Relation of red cell volume to red cell count during treatment.

Plasma Protein and Cholesterol.—The plasma protein findings are of little interest. During the acute stage the plasma protein percentage is slightly subnormal (6·92 per cent. in 19 normal controls). As the patient improves a normal figure is regained. The plasma cholesterol before treatment shows the fall characteristic of pernicious anæmia. A steady increase in this substance occurs during treatment with liver, and in some cases abnormally high values are ultimately attained. The cholesterol rise tends to show a rough parallelism to the increase in red cells, the highest red cell counts usually coinciding with the highest cholesterol figures. This increase in cholesterol is not in any way specific, since it is seen also in other forms of anæmia during improvement. It has been noticed, for instance, in splenic anæmia accompanying the rise in the red cell count that follows splenectomy. Liver itself is said not to be particularly rich in cholesterol, and there seems therefore no reason to

o.	Date.	Plasma volume.	Blood volume.	Plasma per kilo.	Blood per kilo.	Weight, kilos.	Plasma protein.	Plasma cholesterol.	Red corpuscles.	Red cell count in millions.	Hb.	Colour index.	—
		c.cm.	c.cm.	c.cm.	c.cm.		%	%	%				
	30/5/27	2703	3421	50·8	64·3	53·2	6·22	0·106	21·0	1·78	42	1·18	Liver diet, 1/6/27.
	13/6/27	2920	4583	52·3	82·1	55·8	6·60	0·172	36·3	3·01	68	1·13	
	27/6/27	2916	4967	50·6	86·2	57·6	6·63	0·169	41·3	3·85	78	1·01	
	5/10/27	2751	5212	47·2	89·7	58·1	7·11	0·212	47·2	6·16	88	0·72	
	21/6/27	2818	3387	52·9	63·6	53·2	6·47	0·138	16·8	1·47	36	1·24	„ 22/6/27.
	3/8/27	2775	4664	49·5	83·2	56·0	6·60	0·182	40·5	3·80	82	1·08	
	26/3/28	2587	4652	40·4	73·3	64·0	6·78	0·260	44·4	5·43	92	0·85	
	22/9/27	2938	3329	49·9	56·6	58·8	6·51	0·117	12·0	1·28	28	1·10	„ 23/9/27.
	12/10/27	3029	4638	50·3	77·0	60·2	6·54	0·130	34·7	3·84	62	0·80	
	31/10/27	3244	5507	51·2	87·0	63·3	7·27	0·140	41·1	5·01	70	0·70	
	24/2/28	2942	5802	46·5	91·8	63·2	6·95	0·152	49·3	5·33	90	0·85	
	6/2/28	3532	6398	39·3	71·2	89·8	6·82	0·198	44·8	5·66	90	0·79	Liver since 7/3/28.
	15/6/27	2703	3764	62·5	87·1	43·2	6·42	0·126	28·2	2·23	50	1·13	Liver diet 16/6/27.
	15/11/27	2257	3818	44·2	74·8	51·0	7·56	0·184	40·4	4·02	80	0·99	
	29/2/28	2401	4168	45·8	79·6	52·3	6·95	0·160	42·4	4·75	88	0·92	
	10/10/27	2800	3872	44·5	61·5	62·9	6·65	0·156	27·7	2·55	52	1·02	„ 12/10/27.
	4/11/27	2947	4815	45·9	75·0	64·2	6·23	0·156	38·8	4·04	72	0·90	
	26/4/27	3550	5976	55·9	96·0	63·5	6·83	0·100	40·6	3·53	72	1·01	„ 31/3/27.
	5/5/27	3531	5649	55·6	88·9	63·5	6·60	0·117	37·5	3·90	76	0·97	
	26/1/28	3105	5495	50·4	89·2	61·6	7·13	0·120	43·5	4·80	80	0·83	
	9/8/27	3183	5389	46·2	78·5	68·8	6·85	0·161	41·0	3·76	74	0·98	„ 6/7/27.
	25/11/27	2924	5414	39·4	73·0	74·1	7·00	0·309	46·0	6·25	74	0·59	
	25/5/27	2833	3317	76·9	90·1	36·8	6·54	0·128	14·6	1·33	34	1·25	Arsenic only.
	24/6/27	3303	4463	77·3	104·5	42·7	6·37	0·085	26·0	2·35	45	0·95	

ter acute hæmorrhage occurs in this chronic type of æmia. The relatively slight reduction in the plasma otein percentage confirms the absence of an drræmic plasma plethora.

The plasma volume per kilo of body-weight is proximately normal in the majority of cases. is relationship cannot, however, be regarded as nstituting a very satisfactory standard, since the olume of plasma is unlikely to increase in proportion the adipose tissue, which is relatively poorly scularised. In consonance with this view the fattest tient in our series shows the lowest and the thinnest e highest volume of plasma per kilo of body-weight. mprovement seems to be marked by the addition of

believe that the rise in the plasma cholesterol is the direct result of cholesterol ingestion. Unfortunately, we have had no opportunity of observing the effect of active but cholesterol-free liver extract, since no untreated cases have presented themselves since the extract became available to us.

It may be mentioned that in five of our cases gastric analyses still show complete achlorhydria in spite of clinical recovery.

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THE RETICULOCYTE CRISIS AND THE SERUM BILIRUBIN IN PERNICIOUS ANÆMIA.

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THE reticulocyte count constitutes a very important means of ascertaining early whether or not a given case of pernicious anæmia will respond to treatment by liver. A rise in the proportion of reticulocytes to red cells occurs within three days of the commencement of treatment in cases responding satisfactorily. Within a week the reticulocytes should have reached their maximum, which may be over 30 per cent. of the red cells; the number of reticulocytes then falls rapidly and within three weeks from the beginning is approaching normal. An increase is obvious before the increase of the ordinary red cells has become definite. In order to avoid missing the "crisis," counts must be made at the commencement of treatment at intervals of less than three days. The method used in the present instance was that described by Todd,[1] which has the advantage of giving a permanent preparation.

A fall in the serum bilirubin is another early manifestation and would probably indicate response to treatment as well as the reticulocyte count. For this estimation, however, several cubic centimetres of blood are necessary, while for the reticulocyte count enough can be obtained from a needle prick. The sudden and dramatic drop in the bilirubin content of the serum is an obvious indication that one factor in the response to treatment is the cessation of abnormal hæmolysis. The reticulocyte crisis early in treatment is an indication that numerous young red cells are thrown into the circulation as a result of treatment. That the progressive improvement under treatment is not due to the continuation of this inflow is shown by the early drop of the reticulocyte percentage to normal, though the rate of increase of the red cells remains steady. Both the cessation of the hæmolysis and the phenomenon of the reticulocyte "crisis" appear to be capable of explanation on the suggestion put forward by Peabody,[2] who has pointed out that in the relapse stage of pernicious anæmia the bone-marrow is packed with red cells of immature megaloplastic type which appear to be incapable of completing their development. If thrown into the circulation in this state, they are rapidly destroyed. He suggests that the action of the liver is to supply a stimulus enabling these cells to reach maturity. The reticulocyte crisis may be looked upon as representing an act of catharsis on the part of the bone-marrow, after which cell production proceeds in a normal manner.

[1] Todd, J. C.: Clinical Diagnosis of Laboratory Methods. London, 1923, p. 377.
[2] Peabody, F. W.: Amer. Jour. Path., 1927, iii., 179.

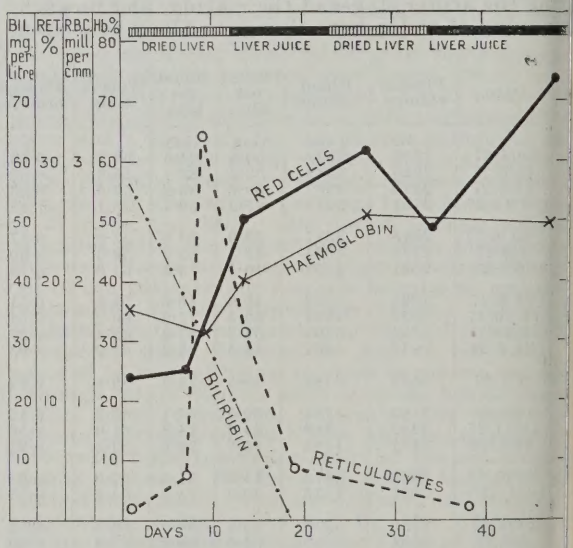
Clinical Details.

CASE 1.—Female, aged 61. The patient herself gave a history of only six weeks' abdominal pain and vomiting her medical practitioner, however, stated that she had been very pale and asthenic for at least three years. On admission on Feb. 18th, 1928, patient showed the characteristic icteric tinge of the skin; her mucous membranes were very pale and she complained of abdominal pain and intermittent vomiting, bearing no relationship to food. Blood picture: hæmoglobin, 35 per cent.; red cells, 1,200,000; colour-index, 1·25; white cells, 2250; polymorphonuclears, 60 per cent.; lymphocytes, 32 per cent.; monocytes, 2 per cent.; reticulocytes, 1·1 per cent. of red cells. Anisocytosis and poikilocytosis present but not marked; no normoblasts or megaloblasts. Icterus index of serum, 36; bilirubin 56 mg. per litre. A fractional test-meal revealed absence of free hydrochloric acid.

The patient was started on a daily dose of 2 oz. of a dried liver preparation (Hepatopson) daily. A week later her clinical condition was unaltered. Blood picture: hæmoglobin, 31 per cent.; red cells, 1,170,000 per c.mm.; colour-index, 1·3; white cells, 5950 per c.mm.; many nucleated red cells; reticulocytes, 32 per cent. of red cells. On March 1st patient was put on 2 oz. of ox-liver juice daily. By this time clinical improvement was apparent. Blood picture on March 3rd: hæmoglobin, 40 per cent.; red cells, 2,480,000 per c.mm.; colour-index, 0·88; white cells, 225 per c.mm.; differential count: polymorphs, 44 per cent. lymphocytes, 49 per cent.; monocytes, 6 per cent.; eosinophils, 1 per cent.; reticulocytes, 15·8 per cent. of red cells.

By March 6th the bilirubin in the serum had fallen to low for estimation. By March 8th the reticulocytes had fallen to 4·3 per cent. of the red cells. The progress of this case from Feb. 18th will be seen in Fig. 1. The reticulocytes fell

FIG. 1.

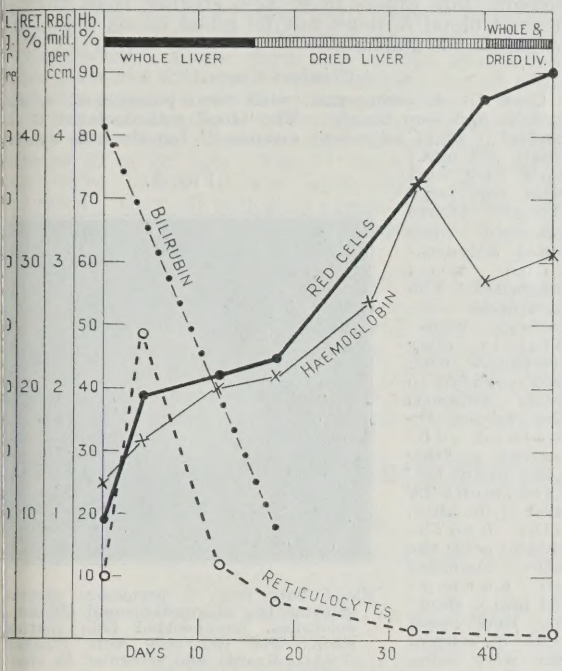


consistently. A drop in both red cells and hæmoglobin between March 16th and 23rd corresponds to a period when the supply of liver juice ran out and the patient was put back upon an insufficient dosage of the dried liver.

CASE 2.—Male, aged 62, complained of increasing weakness for 12 months, breathlessness on exertion, loss of appetite, vomiting, and abdominal pain. He had been treated for gastric ulcer. On admission on Jan. 18th, 1928, he showed a marked icteric tinge of the skin, his mucous membranes were very pale, and he was very asthenic, with numbness and weakness of the legs. Blood picture: hæmoglobin, 25 per cent.; red cells, 970,000 per c.mm.; colour-index, 1·; white cells, 3750 per c.mm.; differential count: polymorphs, 60 per cent.; lymphocytes, 38 per cent.; monocytes, 2 per cent; a good deal of anisocytosis and poikilocytosis of red cells; normoblasts, 1 per cent. of white cells; reticulocytes, 5 per cent. of red cells; icterus index of serum, 17; bilirubin content of serum, 81 mg. per litre. Treatment was initiated on Jan. 21st by the administration of 8 oz. of whole liver daily, according to the diet given below. A fractional test-meal revealed complete absence of free hydrochloric acid.

By Jan. 25th, only four days later, the clinical condition owed marked improvement. Blood picture: hæmoglobin, per cent.; red cells, 1,840,000 per c.mm.; colour-index, 88; white cells, 7000 per c.mm.; reticulocytes, 24·1 per nt. of red cells. Feb. 2nd: Blood picture: hæmoglobin,

FIG. 2.



per cent.; red cells, 2,070,000 per c.mm.; colour-index, 0. Feb. 5th: Reticulocytes, 6·4 per cent.

On Feb. 6th patient was put on 2 oz. of dried liver (Hepapson) daily. On Feb. 8th, blood picture: hæmoglobin per cent.; red cells, 2,360,000 per c.mm.; colour-index, 91; white cells, 6050; differential count: polymorphs, per cent.; lymphocytes, 22 per cent.; monocytes, 7 r cent.; eosinophils, 2 per cent.; icterus index of serum, ; bilirubin content of serum, 18 mg. per litre; reticulotes, 2·8 per cent. of red cells. The progress of the case seen in Fig. 2.

Progress was maintained until the patient left hospital March 1st. One week later the hæmoglobin had fallen om 72 to 62 per cent., while the red cells remained almost ationary at about 4,500,000 per c.mm. The patient was und to be taking an insufficient dose of the dried liver; increasing the dose progress was continued as shown the chart.

LIVER FEEDING IN MULTIPLE INFECTIVE ARTHRITIS.

BY VINCENT COATES, *M.C.*, M.D. CAMB., M.R.C.P. LOND.,
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AND
J. L. DELICATI, L.M.S.S.A. LOND.,
RESIDENT MEDICAL OFFICER OF THE HOSPITAL.

AT the present time data in respect of liver in the eatment of secondary anæmia are somewhat scanty. e have therefore studied the effect of liver feeding infective arthritis in which moderately severe to vere secondary anæmia is an almost constant ature.

The cases chosen fall into two clinical groups:) those in which joint lesions are gross, and (*b*) those which they are less defined. Sixteen cases are ported upon (seven men and nine women). The ost severe anæmia gave the following blood estimaon: red blood corpuscles, 2,080,000; hæmoglobin, 8 per cent.; polymorphonuclears, 40 per cent.; lymphocytes, 56 per cent. The least severe showed: R.B.C., 4,832,000; Hb., 74 per cent.; polymorphs, 57 per cent.; lymphocytes, 39 per cent.

No other treatment for anæmia was given before or during the investigation. The amount of fresh liver varied from 5 to 8 oz. daily, according to the individual's ability to ingest this, and it was given for ten days. One patient who was treated with liver tablets had 78 5-gr. tablets in three weeks. The patients on fluid extract of liver took half an ounce twice a day for three weeks. The results were as follows:—

Group A (joint lesions, gross).

1. Six cases in this group had fresh liver with the ordinary hospital diet. Five of them showed marked improvement and one retrogressed. The average results of the five cases of marked improvement were as follows:—

	From	To
Red cells	3,678,000	4,486,000
Hæmoglobin	64·4%	71%
White cells	8,000	10,816
Polymorphs	49·8%	56·2%
Lymphocytes	45·8%	41·4%

2. One case, on liver tablets with ordinary hospital diet, retrogressed.

3. Three cases were treated with fluid extract of liver and given the ordinary hospital diet. Two showed marked improvement and one case remained in statu quo. The average results of the two cases were as follows:—

	From	To
Red cells	4,080,000	4,712,000
Hæmoglobin	64%	80%
White cells	4,480	14,880
Polymorphs	57%	62·5%
Lymphocytes	37·5%	32·5%

Group B (joint lesions less definite).

1. One case had fresh liver and ordinary hospital diet. This case showed marked improvement. The results were:—

	From	To
Red cells	3,960,000	4,496,000
Hæmoglobin	66%	70%
White cells	12,000	6,400

2. Three cases had fluid extract of liver and ordinary hospital diet. Two of them markedly improved and one retrogressed. The average results of the two cases were as follows:—

	From	To
Red cells	4,264,000	5,100,000
Hæmoglobin	74%	69%
White cells	16,480	10,080
Polymorphs	48·5%	62·5%
Lymphocytes	45%	33%

3. Two cases had fluid extract of liver and a Minot-Murphy diet; one showed marked improvement, and one retrogression. The results of the former were:—

	From	To
Red cells	3,232,000	5,072,000
Hæmoglobin	60%	62%
White cells	9,600	10,880
Polymorphs	76%	60%
Lymphocytes	18%	29%

From the small number of cases reported it would appear that certain patients suffering from infective arthritis benefit extraordinarily, in respect of improvement in the blood count, after liver-feeding, whereas others are untouched. A feature of note is that of the 11 cases which improved, seven showed a marked rise in the polymorphonuclear count with a corresponding fall in the lymphocytes, whereas of the four cases which retrogressed three showed the converse.

We wish to thank the laboratory staff of the hospital for their essential help given in this investigation, and Messrs. Armour and Co. for supplying gratis the fluid extract and tablets made by that firm.

DIAGNOSIS OF PERNICIOUS ANÆMIA BY "BLOOD-HALOES."

By FRANK C. EVE, M.D. Camb., F.R.C.P. Lond.,
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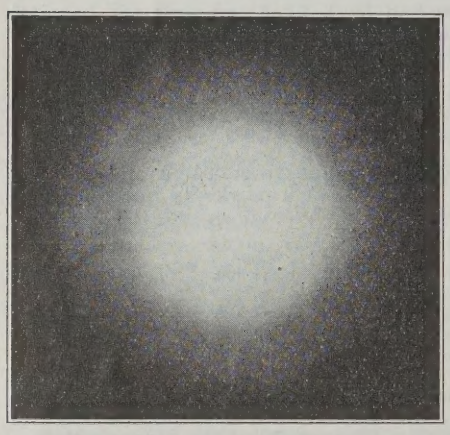
THE researches of C. Price-Jones, A. F. Hurst, and others have established that the most constant feature of pernicious anæmia (and often of subacute combined spinal degeneration) is the increase in average diameter of the red cells of the blood. Measurement of 500 cells involves, however, four hours' work with a very costly projection apparatus. Dr. A. Pijper, of Pretoria, recently sent me his paper [1] describing an ingenious method of using a dried blood film as a diffraction "grating." Using a train of three lenses, he conducted the beam of light through a hole in the wall of a dark room. When a blood smear was interposed a "spectrum" was produced, the size of which was inversely proportional to the red cell diameters. I thought the method would be very valuable clinically if it could be simplified. I found that a standardised apparatus, costing £15—i.e., the Thornton-Pickard reflex camera, 1927, F.A., 4·5—answered the purpose admirably. It is also excellent for photographing patients.

Method.

The camera is extended to its full length and brought near enough (2 feet) to focus the filament of a "focus-lamp" (e.g., Osram, 100-watt). The lamp should always be pointed straight at the camera. When a thin blood smear is placed in front of the lens, the image of the lamp is surrounded by two concentric coloured haloes. A home-made celluloid scale shows their diameters in normal blood to be 32 and 65 mm. I measure to the outer edge of the inner halo. In pernicious anæmia, the haloes are smaller (25 to 29 mm.), hazy edged, and usually badly coloured. That is because the red cells are larger and irregular in shape and size so that the resulting haloes and colours overlap. Normal red cells, being round and equal, cause surprisingly efficient "interference" (alternate reinforcement and cancelling) of the light waves.

FIG. 1.



Blood halo of normal diameter (32 mm.) from a cured pernicious anæmia; brightly coloured and sharply edged (natural size). The red cell diameters were also normal (7·2 μ, Knott).

The haloes are easily photographed (10 seconds at F. 16) but are best measured by eye. Blood films of one cell thick are easily secured if the top glass slide is lightly pushed (like a plane) instead of being pulled (as is usual). The slide must first be well rubbed with ether or alcohol. That part of the film which yields the largest halo must always be selected. Fixation is unnecessary, even for posted films. A normal blood film held up to a bright light shows a play of irridescent colours which are not seen in advanced pernicious anæmia. I conclude that the lens coördinates this diffuse irridescence into a halo. Sparrow's blood, with its oval cells, yields neither irridescence nor haloes.

With a large portrait camera I could produce larger haloes, but what I gained in size I lost in sharpness and hence in accuracy of measurement.

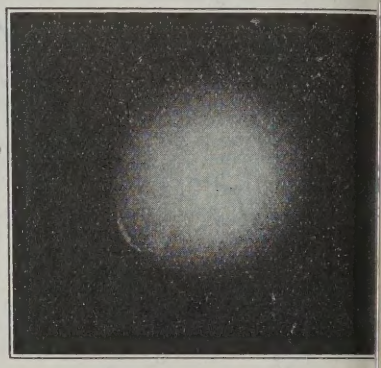
[1] THE LANCET, 1924, ii., 367.

The camera method may show (1) ill-defined and colourless haloes; this means that the red cells are irregular in size or shape. (2) The halo may be sharp and well-coloured but smaller. This is diagnostic of pernicious anæmia or subacute combined degeneration without poikilocytosis. A hazy colourless halo may be given by the poikilocytosis of chronic secondary anæmia, but unless it is also smaller than that of normal blood it must not be relied on as diagnostic of pernicious anæmia.

Clinical Cases.

CASE 1.—A young man with total paraplegia, achlorhydria, and sore tongue. The blood was declared to be normal ("slight secondary anæmia"), but the halo was too small (29 mm.) and the red cells too large (7·9 μ). Hence subacute combined degeneration was diagnosed. The paraplegia recovered completely after treatment with hydrochloric acid, although the haloes remained subnormal. After six months' treatment by liver (½ lb. daily, plus hydrochloric acid) the halo increased to normal (34 mm.), showing that blood cells of normal size were being turned out by the bone-marrow factories. The halo method has given me the same result in four cases of pernicious anæmia after liver diet.

FIG. 2.



Blood halo from a pernicious anæmia showing the diagnostic small (26 mm.) colourless, mossy-edged halo (natural size). The red cells were enlarged (7·55 μ, Knott) and irregular in shape and size.

CASE 2.—A lady of 64 with albuminuria and pyuria of long standing associated with anæmia and large spleen. The diagnosis lay between pernicious anæmia with secondary kidney trouble and primary renal disease with secondary anæmia. A normal halo (33 mm.) decided against pernicious anæmia.

CASE 3.—A lady, aged 65, had subacute cholecystitis with fever and anæmia (Hb. 50 per cent.). The differential diagnosis was cholecystitis with secondary anæmia or pernicious anæmia with cholecystitis due to underlying achlorhydria. The small halo (27 mm.) confirmed by a colour index of 2 settled the matter.

CASE 4.—A man of 53 complained of paræsthesia of hands extremities for six months. He was neither fat nor pale. Hb. 85 per cent. The only diagnostic evidence was pyorrhœa and a blood halo of 25 mm. This suggested a diagnosis of pernicious anæmia with subacute combined degeneration which was confirmed by his sudden death from heart failure [2] and "speckled" heart. Without a quick and easy blood method I should not have diagnosed this case correctly.

Analysis of Halo Diameters of First 55 Cases.

Mouse and hare blood headed the list with haloes of 42 mm. and 37 mm.—their red cells being the smallest. Next at 36 mm. came four infants, aged 2 months to 1½ years. Haloes of 34 mm. were given by the blood of two normal children, a case of Marie's ataxia and one of polycythæmia. Haloes of 33 and 32 mm. diameter were all from normal cases. Two out of five haloes measuring 31 mm. and two measuring 30 mm. were cases of subacute combined degeneration; two more of 30 mm. had pernicious anæmia in the family. The blood of four patients gave haloes measuring 29 mm.; one had pernicious anæmia, another was a child of 2 with grave anæmia, a third had leukæmia, and the fourth was a case of subacute combined degeneration of the cord before treatment with liver. Of the four 28 mm. haloes, three came from cases of pernicious anæmia, one of whom also had subacute combined degeneration; the fourth

[2] Coombs, C. F.: Brit. Med. Jour., 1926, ii., 185.

had bad migraine with achlorhydria, anæmia (70 per cent.), glossitis, and enlarged red cells (8·8 μ measured in 1925 under Dr. A. F. Hurst) and was considered to be on the verge of pernicious anæmia, though without hæmolysis. 27 mm. haloes were given by three cases, two of these pernicious anæmias and one a grave anæmia in a child of 2 cured by liver. The four 26 mm. haloes all came from cases of pernicious anæmia, of whom one also had subacute combined degeneration. There were two 25 mm. haloes both from patients with pernicious anæmia, one of whom had also subacute combined degeneration.

Thus, according to my first 55 cases (confirmed by many later ones), normal adult haloes were nearly always 32 or 33 mm. The 17 haloes of 29 mm. or less were nearly always misty-edged and badly coloured; they all indicated pernicious anæmia with or without subacute combined degeneration of the cord.

Halo Method Checked by Direct Cell Measurements.

Dr. F. A. Knott very kindly lent me four films in which he had measured the red cell diameters.

Film 1 was from a pernicious anæmia patient who had been cured by liver and hydrochloric acid. The red cells were round and equal and of practically normal size (7·2 mm.). Accordingly, the halo was sharp, brightly coloured, and of normal diameter (32 mm.). (Fig. 1.)

Film 2 came from a pernicious anæmia; the cells were very irregular in shape and size and were enlarged (7·55 μ). Consequently the halo was small (26 mm.), colourless, and mossy-edged; pernicious anæmia could be diagnosed at a glance. (Fig. 2.) This case illustrates the important clinical point that an increase of cell diameter of 5 per cent. is magnified into a decrease of halo diameter of 20 per cent.

Films 3 and 4 were from chronic secondary anæmias (hæmoglobin 60 and 50 per cent.) with poikilocytosis. The cell diameters were 7·1 μ and 6·9 μ, and the haloes were pale and hazy, measuring 33 mm. in both films but difficult to measure in (4).

Summary.

The investigation of 60 cases has convinced me that the camera blood-halo method is quick, easy, and reliable, yielding in cases suspected of pernicious anæmia and subacute combined degeneration of the cord decisive clinical information, which is otherwise available only with difficulty and labour.

Clinical and Laboratory Notes.

A NOTE ON SOME INTESTINAL BACTERIA ISOLATED FROM PACKED DATES.

BY R. F. HUNWICKE, B.SC. LOND., A.I.C.,
AND
G. N. GRINLING, F.I.C.

WHEN examining the stools from a severe case of colitis in a young child, we isolated a coliform bacillus having almost the same characters as those given for *B. coli tropicalis* of Cast in Hewlett's "Manual of Bacteriology" (6th ed., p. 428). The distinguishing characteristics of this type are that it is absolutely non-motile, does not ferment dulcite, adonite, or inosite, and ferments sorbite. The non-fermentation of adonite and inosite distinguishes it from *B. lactis aerogenes*, to which it is very similar. The organism was found in practically pure culture in the stools, the only other type found being a short-chain streptococcus, which was not abundant.

It was suggested to us that there might possibly be an association between the presence of this coliform bacillus in the stools and some packed dates which the child had consumed before the onset of the colitis. We were not able to obtain any of the dates from the fancy box which had actually been in use immediately before the attack, but we were supplied with a similar box from the patient's home. The box contained Tunis dates of a well-known brand which had been repacked in France. The dates were examined by cutting off a number of small pieces with a sterile knife and placing them with sterile forceps in tubes of MacConkey's bile-salt broth furnished with Durham tubes. All the tubes on incubation showed abundant production of gas. They were plated to lactose bile-salt agar. At this stage of the inquiry we were only concerned with the possible identification of strains similar to the organism isolated from the stools, and though several intestinal strains were found, preliminary sorting tests showed only one which was obviously similar. The two strains were worked out fully and were found to be very closely related, though not identical.

There seems very little doubt that the severe colitis could be attributed to the organism isolated from the stools. The fact that it was found in the stools in practically pure culture is certainly significant. We have been informed in a private communication that cases of colitis which occurred in the Near East during the European War were attributed to *B. lactis aerogenes*.

The fact that lactose-fermenting, non-sporing bacteria were so readily isolated from the sample of dates seemed worthy of further investigation, and we obtained a number of samples of "block" dates—i.e., dates in bulk—and of packed dates. These were examined by the addition of small fragments to tubes of MacConkey's broth in the manner described above. Tubes which showed production of gas were plated to lactose bile-salt agar and typical pink colonies were picked off, taken into broth, replated, and studied in detail. In examining these further samples we isolated all lactose-fermenting types, as the further inquiry was directed to the possibility of general contamination of dates by intestinal organisms.

We examined 11 samples in all, four being block dates and seven dates repacked in fancy boxes. The block dates were all free from intestinal bacteria, no growth being obtained in MacConkey broth from any sample. From the packed dates a bacillus of intestinal type was isolated in every case except one, in which a lactose-fermenting yeast was present.

The seven strains isolated (including that obtained from the stools) were studied in detail, fermentation tests with 15 sugars and alcohols being carried out in every case. All the organisms were Gram-negative. All fermented lactose with the production of acid and gas, and none liquefied gelatin or blood serum. Litmus milk gave acid and clot in every case. The non-fermentation of adonite and inosite was constant, but marked variations were shown in the fermentation of raffinose. Three strains produced acid and gas from this sugar, two produced acid only, and two showed no fermentation. Four of the strains produced acid and gas from sorbite only after incubation for three or four days. Two strains showed slight motility in 24-hour broth, two were actively motile, and three were absolutely non-motile.

Discussion.

When dates are repacked in Europe a solution of glucose is sprayed over them. This provides a sticky surface to which bacteria would be likely to adhere and which would presumably form a good pabulum for the growth or preservation of fermentative organisms. The block dates, before being sprayed with glucose, present a smooth surface less likely to offer a suitable pabulum to bacteria. It is probable that the dates are handled in the course of packing, and that bacteria are introduced in that process. These observations afford an example of the deceptive appearance of cleanliness which may be conferred on a foodstuff by attractive packing. All the packed dates were attractive and hygienic in appearance, some even being wrapped in transparent wrappings. The block dates appeared dirty and unpleasing to the

eye, yet they proved entirely free from the bacteria with which the packed dates were contaminated.

Whether any danger to public health is involved in the presence of these coliform bacilli on the surface of packed dates is a matter for serious consideration. There is the possibility of specific infection, as in the case of colitis which formed the starting-point of this investigation, and there is also the more general, and perhaps more important, consideration that these intestinal bacteria may indicate fæcal contamination, with the concomitant possibility of epidemic dysentery or typhoid fever. Whether such fæcal contamination occurs, and if so, how, could only be settled by an investigation of packing methods on the spot.

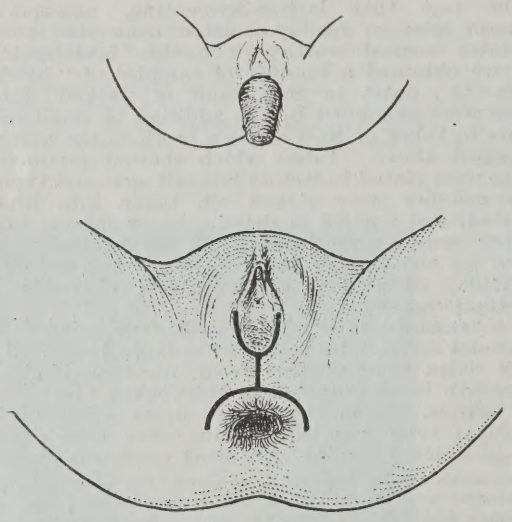
Our thanks are due to Dr. Hector M. Walker (Harrow) for giving us the opportunity of examining the stools from the case of colitis under his care, for obtaining for us most of the samples of dates, and for valuable criticism and advice in interpreting the results of the investigation, which was carried out in the Glaxo Research Laboratories.

NOTE ON AN OPERATION FOR THE CURE OF PROLAPSE OF THE RECTUM IN THE FEMALE.

By Frederick J. McCann, M.D. Edin., F.R.C.S. Eng.

THE failures which I have seen following attempts to cure rectal prolapse in the female prompted me to devise an operation which aimed at the restoration of the retentive mechanism without which the bowel would prolapse with each act of defæcation. The integrity of this retentive mechanism depends on the power and the coördinated action of the levatores ani and sphincter ani muscles, whilst in certain individuals there is a congenital muscular weakness which predisposes to prolapse of the rectum. I have been enabled to observe the results for some years after my operation (in one case 13 years) and so satisfy the *time test*, which is the best test of the efficacy of such operations.

FIG. 1.



The small diagram shows the rectal prolapse. The larger diagram indicates the line of the incision.

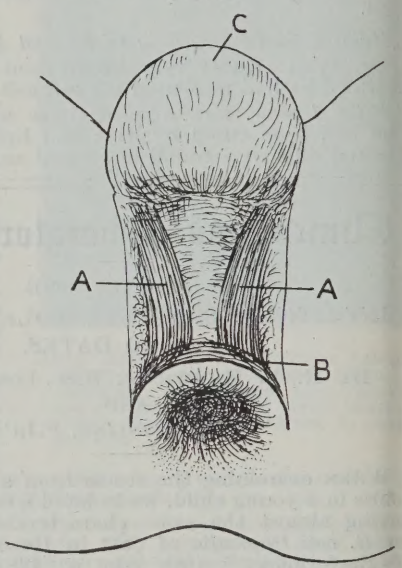
The operation which I perform appears suitable for the majority of the cases.

Preliminary Treatment.—It is essential that the patients should have a preliminary period of rest in bed, not only for purposes of local cleansing, but because congestion is diminished in those who have struggled to be about. The prolapsed bowel should be returned and if possible retained which still further diminishes local congestion.

Description of the Operation.—During the operation the elevated lithotomy position is employed in order to diminish the tendency to protrusion of the rectum.

An incision is made around the dilated anal orifice anteriorly and laterally for three-quarters of its circumference. A mesial incision is then made from the anal orifice to the fourchette which, when deepened, splits the perineal body. This incision is prolonged at its anterior extremity outwards and forwards into each labium (Fig. 1). The anal sphincter and the lower end of the rectum are exposed by dissecting away the superjacent tissues, and the posterior vaginal wall is dissected upwards for about 2 inches (Fig. 2).

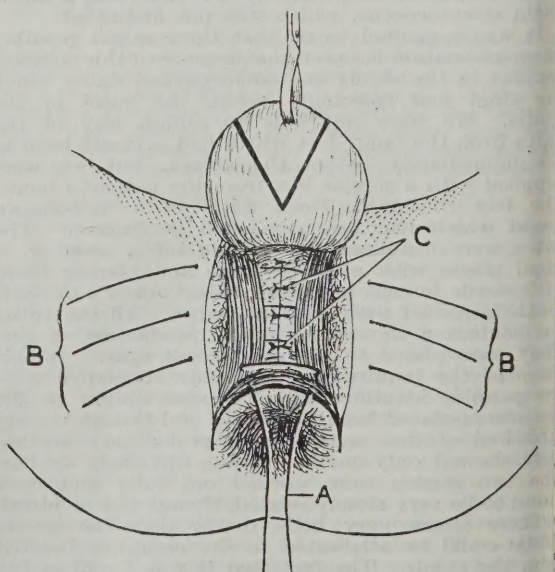
FIG. 2.



C, Vaginal flap. A, A, Levatores ani. B, Sphincter ani.

Catgut sutures are now introduced grasping the sphincter ani, being passed on one side from within outwards under the sphincter muscle and avoiding the mucosa, and in the reverse order on the opposite side and are then tied. A sufficient number of these sutures are introduced to restore the anal orifice to the normal size, and when a good grip of the sphincter muscle is taken by the sutures this muscle is strengthened and tightened and a normal anal aperture is constructed. Sutures of catgut are further used to tighten the stretched or torn fascia over the lower end of the rectum and to reinforce any weak spots. A number of silkworm-gut sutures are next inserted, passing inwards

FIG. 3.



A, First of a series of catgut sutures to tighten the sphincter ani and to restore the anal orifice to a normal size. B, Silkworm-gut sutures. C, Fascial sutures. The V-shaped piece to be excised from the vaginal flap is indicated.

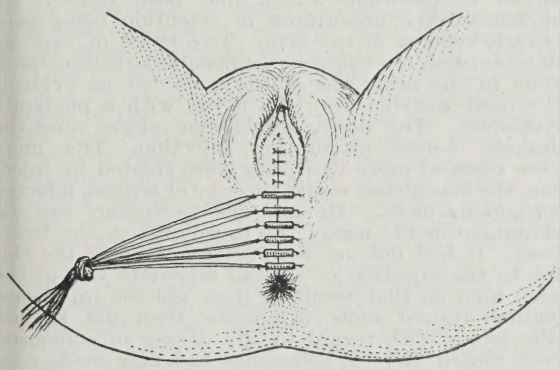
through the skin and levator ani muscle on one side nd outwards through muscle and skin on the opposite ide. The levatores ani muscles are then united by atgut sutures (Fig. 3). A V-shaped piece is excised rom the posterior vaginal wall and the edges united by atgut sutures which when passed also take a grip of the evatores ani muscles in order to bring these muscles and he posterior vaginal wall into close apposition. The skin dges are next united with interrupted catgut sutures and he silkworm-gut sutures tied through small pieces of india-ubber tubing, thus completing the operation (Fig. 4).

The last or most posterior silkworm-gut suture is passed o as to prevent the anal orifice falling backwards, which is ot infrequent after operations for complete rupture of the erineum. Catgut may also be employed for this suture.

A " sacral anus " is a complication which should not e encountered where the necessary precautions have een taken during the operation to restore the anal anal. After this operation I believe it is best to efrain from administering purgatives, at least for ome days in order that healing may remain undis-urbed. Should the patient be uncomfortable in onsequence of the bowel not acting, warm olive oil hould be run into the rectum through a small india-ubber tube and a dose of castor oil given by mouth. he bowels should afterwards be kept acting by a entle laxative.

Although this type of operation remedies the natomical defects which seem to accompany this

FIG. 4.



Operation completed.

ariety of prolapse, yet congenital predisposition is n ætiological factor which cannot be overlooked, or two of my patients were sisters, and I was informed hat another sister and two cousins suffer from rectal prolapse. Exercises to cause contraction of the evatores ani muscles and sphincter ani should herefore be practised after this operation, and uch exercises are still more necessary in the presence f congenital muscular weakness. Finally, this opera-ion offers a prospect of cure, not merely to the urgical derelicts cast adrift because of the failure of ther methods, but to those who bear their suffering ot knowing that anything can be done for their elief, as well as to those who from knowledge of ailures have lost faith in modern surgery.

MANCHESTER PATHOLOGICAL SOCIETY.—At the he annual meeting, held on May 9th, the retiring President, Mr. F. H. Westmacott, vacated the chair, which was taken by Dr. T. A. Goodfellow, President for the forthcoming session. Prof. J. S. Dunkerly gave a demonstration of Venomous and Non-venomous Snakes. Mr. F. H. Westmacott showed specimens and photographs from a case of chronic hypertrophic pulmonary osteo-arthropathy, and Mr. R. D. Mothersole showed a specimen of a congenital buccal cyst about the size of an orange. Prof. Shaw Dunn showed specimens of ulcers of the œsophagus, amongst them two examples of decubitus ulcers of the pharynx, caused by the pressure of the cricoid cartilage against the vertebral column, and Dr. C. Powell White demonstrated a number of microphotographs, illustrating the histology of tumours.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

COMBINED MEETING OF SECTIONS OF DERMATOLOGY AND SURGERY.

A JOINT meeting of these Sections was held on May 16th to discuss the

TREATMENT OF VARICOSE ULCERS BY INJECTION OF SCLEROSING SOLUTIONS.

Dr. J. M. H. MACLEOD, President of the Section of Dermatology, who took the chair, pointed out that the method was not really new, as 50 years ago a deliberate effort had been made to cure varicose ulcers by injecting perchloride of iron and other substances. They had been given up, however, chiefly because of the danger of causing embolism and severe necrosis, some fatal sequelæ having been recorded. Prof. J. A. Sicard, of Paris, and Prof. G. Nobl, of Vienna, and others had now, however, evolved a treatment which was brilliantly successful with only a minimum of risk and had the great advantage of not interfering with the avocation of the patient.

Prof. SICARD, who spoke also on behalf of his colleagues, Dr. J. Forestier and Dr. L. Gaugier, pointed out that varicose ulceration developed on tissue which had become predisposed thereto by a number of factors. General factors included varix, hereditary predisposition, age, endocrine derangement, and syphilis. The result was a weakening of the vein walls and valves, and also of the supporting perivascular tissues. Mechanical factors might also be operative—e.g., intrapelvic pressure; also much standing, with phlebitis, trauma, or local infections. As regards to treatment, Prof. Sicard submitted the following classification. With post-phlebitic ulcers occurring on an œdematous leg, rest, massage, and support were the reasonable methods of attack. For dirty, serpiginous ulcers of long standing, showing a good deal of local dystrophy, the treatment should consist of rest, disinfection, vaccines, light, and surgery. For ulcers with only a moderate degree of local disturbance—a kind which usually followed a limited dermatitis—local cleansing, as by spirit, should precede sclerosing injections. In cases of mixed syphilitic and varicose ulcerations, antisyphilitic remedies, in association with local obliterative injections, were indicated. Prof. Sicard employed a solution of sodium salicylate, in water, of a strength ranging between 20 and 60 per cent. Both the strength of the solution and the frequency of the injections were determined by the actual condition present. The injection was made into all the veins immediately proximal to the ulcerated area, a dose being 2 or 3 c.cm. Sodium salicylate was preferred, but other substances had been used with the same object, such as quinine, sodium citrate, glucose, and hypertonic saline. When, in early cases, eczema was a prominent feature, that also was improved by the method. He had had no experience of untoward incidents, though a very large number of injections had been made, and he regarded the method as highly efficient.

Mr. T. TWISTINGTON HIGGINS said that Prof. Sicard had first drawn his attention to the method, and that increasing use of it had impressed him increasingly with its value. In the series of cases on which his contribution was based the following solutions had been employed: (1) sodium salicylate, of 20, 30, or 40 per cent. strength; (2) quinine and urethane; and (3) 50 per cent. glucose. The first two of these he had found very satisfactory, but glucose had been disappointing. In an analysis of 200 completed cases it was found that 35 had active ulceration at the time of treatment. Sclerosing injections had been strikingly helpful in promoting the healing of many ulcers, though in some this effect was less

obvious. All his cases of ulcer were also treated with Unna's dressing, ointment, &c. In every varicose ulcer, trophic, traumatic, and infective factors played a part. Some people seemed susceptible to degenerative changes in veins and skin, and when these appeared they were progressive. In the production of an ulcer some trauma could usually be found; it might even be caused by irritation by clothing, or scratching an area of irritation. And when once the skin was eroded, infection easily supervened. The type of ulcer which these injections seemed especially to benefit was that in which the trophic element still preponderated; the common situation for these was over the inner aspect of the lower third of the tibia. Some had gone on for years, in spite of ordinary treatment, but readily yielded to the injections. The case was very different, however, with the infected ulcer; there must be a preliminary cleaning up of the site, with rest in bed, and he delayed injection until surgical cleanliness had been secured. A dirty ulcer might be presumed to carry the possibility of an embolus. Despite the size of the area involved in some of these cases, the injection treatment was of considerable value, though naturally results were less immediate than in uncomplicated cases. He was especially interested in the prevention of these conditions, and injection in his view was most useful in the pre-ulcerative stages, when the danger of ulceration could often be averted. At present only a small section of the numerous patients with varicosity submitted themselves for treatment at an early stage; many tried to carry on with the aid of elastic supports, and came only when ulceration was definitely established. Embolism he regarded as a negligible risk in this treatment. It had not occurred in his own 1232 injections. He always tried to satisfy himself that there was no local or distal focus of sepsis in the patient for here, if anywhere, lay the danger of embolism. He advised his patients to avoid vigorous exercise during the treatment and for three weeks thereafter. There must always be some risk of periphlebitis and local necrosis. His series included 23 cases of periphlebitis, 12 of them going on to necrosis. The risk of this was chiefly in old patients. The general toxic symptoms when they arose he considered unimportant. In one young unmarried woman injection of quinine had caused vicarious menstruation. Following the due reaction, the affected segment of vein was obliterated as a venous channel, hence there could be no recurrence in it. Failure might result either from under-dosage or from too protracted treatment. The worst cases needed many injections, but with care and patience obliteration could almost always be promised.

Sir SIDNEY ALEXANDER, who had used the method since 1925, expressed his preference for salicylate of soda, up to 40 per cent. in distilled water. When quinine was used, patients sometimes complained of pain two or three days after the injection. After injections of sodium salicylate they would sometimes declare they felt better even before leaving the room. It was very important to make sure that the solution got into the vein, and he preferred to make the injection with the patient in the horizontal posture.

Mr. DAVID LEVI summarised the results of 300 cases treated by the method. Five of his patients had had thrombosis at sites other than those injected, three patients had not reacted at all, and in one of them a 66 per cent. solution of glucose, a 25 per cent. solution of salicylate, and lastly, quinine and urethane had all proved unsuccessful. The use of glucose seemed to be followed by more complications than did the other substances.

Dr. W. N. GOLDSMITH alluded to the interference with cutaneous nutrition seen in these cases, with stretching, leading to dermatitis, which was a frequent precursor of varicose ulceration. In all varicose conditions prolonged rest in bed should not be enjoined unless it was accompanied by massage and gymnastic movements; otherwise the patient would not be able to deal with the forces with which he would have to meet on getting up. In only one case had Dr. Goldsmith failed to obliterate veins. Before injection it was necessary to ascertain whether the blood was flowing more rapidly upwards or downwards when the patient was in the upright posture. The only contra-indication to the treatment was a history of phlebitis. Only one injection should be done at a time.

Mr. R. T. PAYNE spoke of 30 cases of venous ulceration which he had treated by this method. Almost all the cases showed healing. He used quinine and urethane, and none of his patients had complained of having tasted the quinine afterwards. In one case vicarious menstruation had ensued. Periphlebitis and local necrosis could be prevented by applying direct local pressure to the site for two minutes after the injection, followed by bandaging.

Dr. H. BECKETT-OVERY said he had given over 500 of these injections, and his experience led him to favour sodium salicylate. He inserted the needle with the patient in the erect posture, and then carried out the injection slowly with the patient reclining.

Dr. ST. G. B. D. GRAY entered into the mechanism of clotting, and said he generally found that a venous ulcer had a feeding vein coming in at the top. The results from sodium salicylate were admittedly excellent, but pain was complained of. He now used quinine and urethane, and had patients in the standing posture for injection.

Dr. FORESTIER summed up the discussion and replied to questions which had been raised. He emphasised the importance of attention being paid to early œdema of the skin. Two types of varicose ulcers existed, one being very amenable to this method while in the other the effects were not so evident. The most suitable were the ulcers with a moderate dystrophy. The dirty, serpiginous ulcers must be cleansed before attempting injection. The more often cases of early varicosity were treated by injection, the fewer cases would there be of serious, infected serpiginous ulcer. He and his co-workers saw no advantage in the use of the tourniquet in the treatment. It had not yet been settled whether the clot due to the injection of sodium salicylate was of the same kind as that resulting from glucose injections. Quinine caused more symptoms than did sodium salicylate. With regard to any danger of embolism Prof. Sicard and his colleagues had now made over 300,000 injections of sodium salicylate, and 25,000 of quinine, without one case of pulmonary embolism. Every patient, however, was given a routine preliminary clinical examination, in respect of abnormalities in the blood pressure, urine, and heart which probably contributed largely to the good results.

On the motion of Mr. V. WARREN LOW (President of the Surgical Section) the openers were cordially thanked for their contributions.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.

THE NEW PSYCHIATRY.

AT a meeting of this Association on May 16th, with Dr. J. HAMILTON MARR, the President, in the chair, Sir JOHN MACPHERSON delivered the Maudsley lecture on the New Psychiatry and the influences forming it.

Psychiatry, he said, was indissolubly linked with the medical and biological sciences and participated in their solidarity and also in their unrest. In addition it underwent vicissitudes peculiar to itself. When Pinel and Tuke had rescued the insane from barbarous ill-usage they had liberated human thought from crude and primitive conceptions of insanity. As a result immense advances had been made in the anatomy, physiology, and pathology of the brain. The advent of psychopathology marked the beginning of the twentieth century and had come unannounced. Janet had demonstrated that hysteria was a mental disorder and could be interpreted in

sychological terms. His contribution to psychiatry as the concept of dissociation, which was the basis the new psychiatry. In some respects his definition as not now satisfactory, for it implied a splitting-up consciousness and of personality, and since the rtical mechanism integrated as a single system it as highly improbable that either could be split. ernard Hart had helpfully described dissociation as n "out of gear" relationship, and had pointed out iat much of the misunderstanding about it had risen from conceiving it as containing a spatial ement. As a working hypothesis this was applicable the whole field of mental and nervous phenomena. ughlings Jackson 50 years ago had described a milar condition, teaching that all morbid nervous henomena were due to a negative factor—loss of nction at a higher level—and a positive factor—ver-function at a lower level. The causes of dissocia-on resolved themselves into two coöperating groups, ie causa causans and the causa sine qua non. To ie latter we could at present only refer as inherent istability of the central nervous system. The iodern return to the study of diathesis, temperament, id constitution might throw light on the subject. was on the cause of dissociation that Freud joined sue with orthodox psychiatry, maintaining that it as the conflict of opposing psychological forces and iat the resulting symptoms were due to an attempt n the part of the organism to adapt itself to altered nditions. Upon this statement he had built a stem of psychology which was more firmly estab-shed than some people believed, for it was unassail-le by direct argument or dialectic attack. Doubt uld not be cast on the observed facts, for they were nown only to the individual psycho-analyst, and iticism of the concepts was met by the legitimate iswer that they were not phenomenal facts, but nceptual formulæ similar to the law of gravity and ie atomic theory. The most serious feature in nctional nervous and mental disorders was the ndency to relapse. Unless the Freudian method uld check this tendency—and there was evidence at it did not do so in all cases—it had no advantages er other methods. The Freudian hypothesis was nbarrassing to psychiatry, but was not supplanting

Psycho-analysis might be described as an *imperium in imperio*. The field of psychiatry was finitely wider than that covered by the Freudian ctrines, and one of its most important departments is the investigation of the physical basis of mental sorder. To say that the brain was a living organ is only to say that it was the material and visible mbol of life. The more elaborate a nervous system, e more perfect were its psychical reactions. It is capable of adjusting the individual to most of the dinary situations of human experience, and operated th in time and space.

The Foundations of an Objective Psychology.

Recent investigations had opened up the possibility at mental processes could be approached objectively the physical plane. The psycho-motor, psycho-nsory, and psycho-inhibitory functions of the cortex re co-extensive and coöperative in the initiation d coördination of formulated expression and rposive action. Disorder of purposive action or raxia resulted from definite organic lesions which parated the psycho-motor function from the psycho-nsory and either from the motor area. Apraxia ght be motor; ideomotor, as in perseveration; or ational. The causative lesions were numerous, and ough were on record to justify the localisation of re motor apraxia in the left frontal lobe and front the corpus callosum and of ideomotor and ideational raxia in the supramarginal and angular gyri and e association area of the temporal lobe. Marie and ead had revolutionised earlier conceptions of hasia. Marie admitted no distinction between tor and sensory aphasia, and denied the existence visual, auditory, or kinæsthetic word-image centres d of storage of word-images in the cortex. He ognised only one centre, diffusely localised in the npero-parietal region, which is specialised for language, and insisted that aphasia was intellectual defect involving general intelligence. Aphasia and agraphia had become symptom complexes produced by the dissociation of definite systems of mental processes, termed by Head symbolic thinking and expression. Temporary or functional forms of apraxia and aphasia had been described by von Monakov, and resulted from a loss of cerebral equilibrium. The cortex functioned by means of vital energy, which kept its various positive and negative activities in uniform equilibrium like the motion of a humming top. This vital neural energy was common to all nervous function, and Head had suggested for it the name "vigilance." Any agency which lowered it disturbed cortical equilibrium and produced dissociation until a new equilibrium gradually became established. Pavlov's remarkable experiments on dogs had demonstrated the existence of cortical inhibition in actual operation. The cortex might be visualised as a mosaic of inhibitory and excitatory areas within which the dynamic activities of irradiation and induction constantly acted and reacted in endless variety. Certain changes in the cortical equilibrium of the dog might result in natural sleep, in a kind of hypnosis, or in acute mental perturbation. Pavlov's experiments had intimated that cortical inhibition and sleep were one and the same process. Excitable and inhibitable types of dogs stood at either end of a temperament- and character-series, and they tended respectively to develop symptoms corresponding to the maniacal and melancholic phases of the manic-depressive syndrome. In predisposed dogs mental disturbances developed as a result either of an unusually acute clashing of excitatory and inhibitory processes or the influence of strong and extraordinary stimuli. The hypnotic symptoms were closely allied to hysteria, and the pathological mental perturbations to phases of circular insanity. Hysteria was a functional form of apraxia in which amnesia, however unobtrusive, was always present. The symptoms were never absolute; sensation was present, though unrealised, in the anæsthetic limb, and contractures relaxed during sleep. These paradoxical phenomena pointed to inhibition of function in the psycho-sensory and psycho-motor centres, with automatic functioning of the corresponding receptor and effector centres of the cortical projection system. As far as it was permissible to compare dogs with men, Pavlov's work indicated that the finely balanced equilibrium of the mosaic of cortical inhibitions and excitations with their dynamic interplay of irradiation and induction was replaced, in the manic-depressive syndrome, by coarser, badly differentiated areas of inhibition or larger, badly inhibited areas of excitation. These researches showed the lines along which mental science was advancing towards the solution of the problem of dissociation. They had broken down the artificial distinction between physiological and psychical processes and reactions and laid the foundation of an objective psychology.

The State and Psychiatry.

The intervention of the State in the care of the insane had been made essential by abuses, but had had certain disadvantages for psychiatry in that it had detailed a much too limited number of medical men for administrative duties and had created an artificial class of certified persons. The prejudice against lunatics and lunacy administration might be discerned in the legislature, the law courts, and the press, and the fundamental error underlying it was that the certified insane alone were mentally disordered. Yet there was no single symptom in the whole range of mental disorders that was not represented in the mental processes of normal men and women, who were only saved from insanity because their more or less efficient cortical mechanisms were able to correct mental refractions and inhibit tendencies to abnormal behaviour. Abnormal behaviour determined the need of certification. The certifying authority ought to be able to go beneath behaviour to the nature and cause of the cortical dissociation, and therefore the statutory appointment of a layman to revise medical opinion

could only be regarded as a device to allay public suspicion. The Lunacy Act of 1890 showed less care for the welfare of the insane than for the protection of the sane. Beyond doubt existing suspicions in the public mind were aggravated rather than allayed by the trend of modern legislation. In countries where there was absence of suggestive "safeguarding enactments" there was little public suspicion.

Napoleon had said: "In the long run the sword will always be conquered by the spirit." The scientific spirit behind psychiatry could not be defined in Acts of Parliament. It tended to evade legal restraints and break through official legislation, sometimes in undesirable directions. The obvious way of guiding it into channels which best subserved the well-being of patients, the growth of scientific knowledge, and the trend of healthy public sentiment was the admission of all cases of mental disorder to public hospitals without certification or judicial intervention. These people should remain under observation and treatment until they recovered or until a liberal period of observation had shown that there was no prospect of early recovery. There was plenty of legal machinery for dealing with the small recalcitrant minority. In conclusion Sir John Macpherson looked forward to the time when methods of physical science would have discovered means for the removal of cortical dissociation more permanent in their results and less dangerous to life than nature's rougher methods, exemplified in the malarial treatment of general paralysis.

A vote of thanks to the lecturer was proposed by Dr. J. G. SOUTAR and seconded by Dr. W. F. MENZIES.

Reviews and Notices of Books.

PHYSICS IN MEDICAL RADIOLOGY.

By SIDNEY RUSS, D.Sc., F.Inst.P., Joel Professor of Physics, Middlesex Hospital; L. H. CLARK, Ph.D., F.Inst.P., Research Assistant, Physics Department of the Hospital; B. D. H. WATTERS, M.Sc., A.Inst.P., Demonstrator to the Department. London: Chapman and Hall, Ltd. 1928. Pp. xii. + 234. 12*s*. 6*d*.

THIS is an excellent book, admirably arranged, which fills a gap in British radiological literature. Of the 17 chapters, the first three deal with electrostatics and current electricity, with electrical conductivity in gases, and with electromagnetic waves. Then follow chapters on cathode and X rays, on the production and properties of X rays, the measurement of X ray intensity, and the wave-lengths of X rays. The phenomena of radio-activity, of radio-active emanations and active deposits, and of dosage in radium therapy form the subject matter of Chapters VIII. to X, while a very interesting section on photography, light, and X rays closes the first part of the book. The remaining chapters (XII. to XVII.) deal with the phenomena of electro-magnetism and with the apparatus used in medical work which depends for its working—primarily at any rate—upon Faraday's discovery. Among such apparatus we may mention motors, high-tension generators, and high-frequency and diathermy currents. There are two valuable appendices, of which the first contains the revised recommendations of the X Ray and Radium Protection Committee (1927); while the second, by Prof. Russ and Mrs. R. H. Somerset, deals with a hospital radium service. Inasmuch as the radon distribution centre of the Medical Research Council is housed at the Middlesex Hospital, and is under the charge of Prof. Russ, it is plain that we have here first-hand information, embodying great experience which will be read with profit by all who are concerned in the use of radium and radon in hospitals and similar institutions.

The authors have succeeded in focusing the main physical facts of special importance in radiological work within small compass. The book mak no claim to be a general text-book of physics, b is an epitome of a particularly specialised branch. modest preface includes a suggestion of regret tha though mathematics are so distasteful to ma doctors, the authors have been unable to refra from introducing mathematical argument into t text where this has seemed essential. No apolo is needed: for radiology without physics is abo as scientific as surgery without anatomy, and so acquaintance with mathematics is essential to ev an elementary knowledge of physics. Those medic men who propose making a special study of radiolo must revise their mathematics, if their use of apparat is to be intelligent, and if they hope to underta any useful research in the course of their practic Prof. Russ himself has been one of the pioneer worke in this country upon the combined physical a biological actions of radiation, and can therefo speak with authority upon the amount of math matical knowledge, which must precede any attem to understand even the elementary principles radiology in its medical applications. One who h had long experience in the teaching and examinati of medical students in physics is not likely to set t standard unduly high. Any effort required grasping the principles set out in the book will well repaid.

DISEASES OF THE LARYNX.

Third edition. By HAROLD BARWELL, F.R.C.S President of the Section of Laryngology, Roy Society of Medicine; Consulting Surgeon, Diseas of the Throat and Ear, St. George's Hospit London: Humphrey Milford, Oxford Universi Press. 1928. Pp. 278. 12*s*. 6*d*.

IN these days of rapid advances in surgical pr cedures and technique it is a difficult task to rev a book after a long interval in such a way that retains the characteristics of its predecessor, and the same time reflects accurately the changes whi have occurred in the interim. Mr. Barwell h succeeded in providing a concise and up-to-da manual for the general physician and surgeon and t student of medicine on diseases of the larynx. T greater part of the book has been re-written. T development of endoscopy has involved not or expansion of the section on examination, but has advanced our knowledge of pathological conditio of the trachea and bronchi as to necessitate t inclusion of much new matter. An entirely n chapter on diseases of the œsophagus has been add Under the non-commital heading, Idiopathic Di tation, is described the condition called, by A. Hurst, achalasia of the cardia, and, by Cheva Jackson, functional hiatal stenosis. The method self-treatment by a rubber bougie filled with mercu which was devised by Hurst, is held by Mr. Barv to be simple, easy, and safe. The chapters Tuberculosis of the Larynx are outstanding, and b the stamp of the author's wide experience in t type of case. His discussion of the treatm indicated is lucid and unbiased, despite the f that he obviously considers that most laryngolog now tend to neglect active local treatment, even cases where it might prove of benefit. In the sect on Malignant Disease he has presented the case and against operation with impartiality, and embodied the most recent results obtained by X r and radium therapy. The practitioner will grateful for the excellent account of the measures be adopted in cases of very advanced laryng tuberculosis and in those of inoperable malign disease of the larynx. Such cases are obvious source of the greatest anxiety to the family doc and most treatises fail to assist him in devi palliative treatment. The printing and illustrat are excellent, and despite the addition of new mate the volume has not been enlarged to an unwie size.

THE LANCET.

LONDON: SATURDAY, MAY 26, 1928.

GLYCOSURIA AND HEREDITY.

THE presence of dextrose in the urine used to be garded as pathognomonic of diabetes mellitus, but years ago a case was described in which glycosuria as associated with nephritis, and the amount of igar in the blood was normal. The next few years w occasional reports of other cases in which the ood-sugar remained at its usual level while dextrose as being excreted by the kidney, and it was soon alised that nephritis was but rarely associated ith this phenomenon, and that, apart from this ding, the patients were perfectly well. The scovery by IVAR BANG that the blood-sugar uld be estimated accurately in small samples, and e subsequent introduction of simpler methods, has ade possible the careful study of many cases of is kind, and it is now clear that the sugar tolerance quite normal. The reason why sugar appears in e urine is that the "threshold" of the kidney is t set at the usual level. Whilst a normal kidney es not begin to excrete dextrose until the blood-gar has risen to 170–180 mg. per cent., the kidneys these patients will do so at lower levels, the thres-ld being set at any point from the normal down to mg. or even lower. The condition may be suspected en glycosuria is found unassociated with any of e usual symptoms of diabetes mellitus, and circum-antial evidence can be got by studying the symp-ms which occur after a drastic reduction of carbo-drates in the diet or after injecting insulin. A finite diagnosis, however, can only be made after serving the effect of a dose of dextrose on the od-sugar, tests being made at half-hourly intervals two hours.

The condition thus discoverable has had various mes, such as renal diabetes, diabetes innocens, and gligible glycosuria. In this country it is usually led renal glycosuria, but the name of orthoglycæmic rcosuria suggested by URBAN HJÄRNE in a recent nograph[1] is perhaps a better, because it signifies at the glycosuria occurs although the blood-sugar normal; furthermore, it does not suggest any ease of the kidney. Almost as soon as the condi-n was recognised it was noticed that it often ected more than one member of the same family, d it is this aspect of the subject that HJÄRNE has n studying. Being lucky enough to find a family which it commonly occurs, he has made exhaustive quiries and observations. Seven generations have n studied, but nothing abnormal was discovered the history of the first three generations, which nprised ten known persons. In the fourth genera-n there were 18 members of the family, and one had glycosuria which did not run the course of a true betes mellitus, and was probably orthoglycæmic. the third generation there had been a marriage between first cousins, and in the fourth generation one of the offspring of this marriage again married a cousin. It is therefore possible to divide members of the next three generations into three groups according to whether they sprang from two, one, or no first-cousin marriages. The group in which there had been no intermarriage consisted of 102 persons, 72 of whom were examined. Of these, ten had either typical orthoglycæmic glycosuria or had had a glycosuria without any symptoms of diabetes mellitus. True diabetes occurred once in the fifth and once in the seventh generation, affording a striking contrast to the other cases. The group which sprang from one marriage between first cousins contained 108 persons, 77 of whom were examined. Fourteen of them had either an orthoglycæmic glycosuria or else a glycosuria without any symptoms. One case of true diabetes developed in the fifth generation and one in the sixth. Lastly, in the third group, which arose from two first-cousin marriages, there were 41 persons, of whom 30 were examined. Of these 2 out of 6 in the fifth, 8 out of 13 in the sixth, and 6 out of 20 in the seventh generation had typical orthoglycæmic glycosuria, as shown by sugar-tolerance tests, and there were no cases of true diabetes mellitus. This careful piece of work shows clearly that intermarriage increases the frequency of this rare abnormality, and after investigating the family records, partly with a view to seeing whether the transmission obeys the dominant or recessive laws of inheritance, HJÄRNE states that "the cases occur entirely in accord with the manner and numbers in which a monofactorial dominant factor is inherited."

For years there has been a difference of opinion in this country between, on the one hand, those who recognised that orthoglycæmic glycosuria was harmless, and did not shorten life, and, on the other, most of the life assurance offices, who took the view that the condition had not been long enough observed for any such conclusion to be drawn. Acting on this opinion they have either refused applicants altogether or loaded the policy against them in various ways. The evidence provided by HJÄRNE confirms the views of previous workers and should go far towards inducing the life assurance offices to alter their attitude towards cases which, on proper investigation, prove to have orthoglycæmic glycosuria.

[1] Urban Hjärne: Acta Medica Scandinavica, 1927, lxvii.,

STATUS LYMPHATICUS.

ABOUT 200 deaths are registered each year in this country as due to "status lymphaticus." We owe the idea that there is an association between unexpected deaths from trivial causes and a bodily constitution characterised by a large thymus and a general excess of lymphoid tissue to PALTAUF, who put it forward nearly 40 years ago, and there is still some doubt whether the expression really means anything more than "G.O.K." In an admirable review of the evidence published last year, Prof. M. GREENWOOD and MISS WOODS [1] came to the conclusion that if "status lymphaticus" exists at all its anatomical signs cannot be recognised post mortem and that therefore it cannot be regarded as a satisfactory explanation of some of the deaths which "would in more pious, but not more superstitious, days have been attributed to the visitation of God." The committee appointed by the Pathological Society of Great Britain and Ireland and the Medical Research Council came to much the same conclusion in their

[1] Jour. Hygiene, 1927, xxvi., 305.

preliminary report.[2] Abroad there has been much discussion and the majority of observers are at least sceptical about the reality of the condition or at any rate about its frequency. It is, therefore, useful to read a survey of the subject by Dr. DAVID MARINE,[3] who takes a different view.

It is generally admitted that a large thymus and big lymphatic glands are found very often in children whose death requires no more explanation than obvious violence, and that infections and malnutrition lead to an extraordinarily rapid wasting of the thymus and lymphoid apparatus; what is commonly regarded as anatomical status lymphaticus is the normal condition of the healthy child and the patients who die of broncho-pneumonia or enteritis after a few days' illness, and from whom most of our experience is derived, have a grossly atrophied lymphoid system. If the children who are run over by motor-cars or killed in fires show the anatomical signs of status lymphaticus, it seems hardly reasonable to look on the same signs as a satisfactory "cause of death" in those who shock the anæsthetist by dying after a whiff of chloroform or who succumb to some experience no more violent than a bath. Dr. MARINE, however, argues that there is more substance in "status lymphaticus" than these facts suggest. Starting with the observations that a large thymus is found pretty regularly in fatal Graves's disease and in a certain number of cases of Addison's disease, and that excision of the adrenals in animals lead to an increase in the size of the thymus, he suggests that there is a group of persons where a primary deficiency or imbalance of the endocrine apparatus leads to lymphoid hyperplasia and a lowered resistance to various stimuli and poisons, and that this group have genuine "status lymphaticus." He deprecates the habit of making the size of the thymus the final diagnostic criterion; different parts of the lymphoid apparatus may be involved in different cases. Other anatomical changes have been described—small suprarenals, hypoplastic aorta, delayed genital development, disturbances in calcification, lymphocytosis, and so on. None of them, however, are at all constantly present, and the best that can be made of the data seems to be the suggestion that it *may* be possible to disentangle from the general mass certified as "status lymphaticus" a small group of cases which are really abnormal anatomically. Perhaps the most likely association is with hypoplastic adrenals; adrenalectomy causes what Dr. MARINE boldly calls "experimental status lymphaticus" and a greatly lowered resistance to various toxins and poisons; the involution of the human adrenal cortex which occurs just after birth may be the explanation of the frequency of "status lymphaticus" in young children. But the case which he makes for the reality of the condition is not convincing.

The problem is difficult to solve, for these unexpected deaths are not nearly as common as their notoriety might suggest, and the controls, in the form of healthy children accidentally killed, are not very common. The recent Coroners' Act seems to have had the unfortunate effect of diminishing the number of examples of sudden and violent death which are subjected to expert examination, and emphasis is laid once more on the grave defect in having no central institute in London where all the medico-legal work should be concentrated in the hands of experienced pathologists, who might have some chance of getting to the bottom of this and similar problems.

[2] Jour. Path. Bact., 1925, xxviii., 132.
[3] Arch. Path., 1928, v., 661.

THE BRITISH PHARMACOPŒIA.

THE British Pharmacopœia has had to suff many criticisms, and some of them have been d to misconceptions of its purpose and function. T Subcommittee of the Committee of Civil Researc whose recommendations are printed in anoth column, has at least the merit of having made u its collective mind upon these matters. The origin statutory explanation of the Pharmacopœia, w know, is that it is a book containing a list of medicin and compounds and the manner of preparing then together with the true weights and measures b which they are to be prepared and mixed, an containing such other matter and things relatin thereto as the General Medical Council shall thin fit. So said the Medical Act in 1858, and, aft Parliament had declared four years later that t Pharmacopœia of the Council was to supersede th different publications in England, Scotland, an Ireland, the first edition was issued in 1864. Since tha date changes have been plentiful. It was sufficient f the early Pharmacopœias to be descriptive lists medicines compiled by practitioners for use by pract tioners. To-day the British Pharmacopœia mus as the Subcommittee observes, provide not only carefully scrutinised list of current drugs of reput but also authoritative standards whereby the purit and efficacy of these drugs may be tested. To th dispenser it will be an actual manual of practice he must dispense according to its standard an medicament contained in its pages which is mentione in the prescription handed to him. To the physicia it is something different; to him it is not a manu of therapeutics to be consulted in daily practic but a guarantee that, when he prescribes a dr which is mentioned in its pages, he and his patien can be confident that they will obtain an article the quality and character therein defined. T patients mean the public at large, and the publ will be more interested in obtaining the guarant than in the assessment of responsibility and cred amongst those who collaborate in the compilatio

Parliament in 1858 enacted that the General Medic Council should cause the British Pharmacopœia be published under the Council's direction and shou cause it to be altered, amended, and republished often as was deemed necessary. It has been undoubted grievance of many who have labour in this field that the Council—a body created f more than one purpose—had no ad hoc equipme To secure a truly authoritative publication it essential to call the Pharmaceutical Societies in council and to give them the representation whi their services deserve. No better method is lik to be suggested than the proposed new Pharmacopo Commission selected with a reasonable elastic from persons of proved knowledge and experie by a Selection Committee on which all interests w be duly represented. The machinery for revision f the publication is rightly to be made permaner periods of alternative activity and inactivity can cope with the constant correspondence and collat of material which modern conditions dema Revision every ten years, following the United Sta practice, is undoubtedly a sound proposal; suggestion of periodical supplements between successive editions may be difficult to realise, but idea of local supplements to be issued officially India and the other Dominions overseas is proba the only practical method of meeting a kno Imperial difficulty. If India and the Domini can see their way to coöperate in the work, t

an ensure the consideration of their special interests. he finance of the scheme is to have a trial run with a ind of its own. There is apparently a hope that ne General Medical Council will find the proposition elf-supporting.

The Subcommittee, in its report and recommendations, raises many other issues, but it may be sufficient for the present to say that it has discharged ne first duty of such a body by achieving unanimity nd by putting forward proposals in a clear and easonable form.

Annotations.

"Ne quid nimis."

THE PRESIDENCY OF THE GENERAL MEDICAL COUNCIL.

Sir Donald MacAlister was appointed 24 years go President of the General Medical Council. He vas at the time a tried member of the Council, having n 1889 succeeded Sir George Humphry as Representative of the University of Cambridge, but there were many members of the Council senior to him, o that it was significant of the impression which ne had made upon his colleagues that his nomination s their head gave immediate satisfaction to them ll. On Tuesday afternoon last, at the opening of the present session of the Council, Sir Donald MacAlister ttempted to resign this long-held trust, and testified n doing so, to the full measure of continuous support which throughout his extended tenure of office he ad received from his colleagues. For the medical profession we can say that the Council have throughout been well advised in refusing to allow Sir Donald MacAlister to retire from the leadership of their deliberations. From the inception of his Presidency o its close, he has displayed the qualities which all recognise as essential for leadership. He has devoted an ntellect of unusual force and clearness to his far-reaching duties, not sparing himself, yet never unwilling o delegate responsibility or to leave in the hands of others the preliminary and detailed work necessary, f special questions were to be presented in comprehensible form to the general body of the Council. The dignity of his office has been safe in his hands, while he has never lost sight of the fact that the General Medical Council was created by Act of Parliament in the public interest. Medicine and the public already owe Sir Donald MacAlister an unpayable debt, and the news that he has consented to give another term of arduous service is welcome.

FURTHER OBSERVATIONS ON ANÆMIA.

THE papers on anæmia which we publish this week may be regarded as supplementary to those on liver treatment appearing in our issue of April 28th. In reviewing the remarkable results of this remedy in pernicious anæmia, we then pointed out that the work of Whipple and Robscheit-Robbins which led to its adoption was carried out on dogs suffering from experimental secondary anæmia. The natural inference is that liver should have a beneficial effect in human secondary anæmia, though its action in the "primary" variety is evidently much greater, and this inference seems to be justified by the work of Dr. Janet Vaughan at University College Hospital. Two of her cases showed a small but definite increase of reticulocytes, though in others there was no response of this kind. The fact that she could record no benefit in lymphatic leukæmia is not very surprising in view of the wide divergence of the origin of lymphoid cells and red cells, but this negative result should not deter clinicians from trying the remedy in leukæmias of myeloid type. Dr. Vincent Coates and Dr. J. L. Delicati, of the Royal Mineral Water Hospital, Bath, have studied its effect in arthritis of varying severity and record in most cases a rise in the red cell count during the short period of treatment. Dr. S. C. Dyke and Dr. Joan Greener, working at the Wolverhampton and Staffordshire Hospital, have prepared graphs showing that the reticulocyte crisis at the beginning of liver treatment synchronises with a rapid drop of the serum bilirubin to normal. This drop of the serum bilirubin, on the face of it, seems to point to a cessation of hæmolysis, and these observers offer an explanation of the coincidence of the two phenomena based upon the recent American work of Peabody. Conclusive proof is, however, lacking that the increase of the serum bilirubin, almost invariably present in pernicious anæmia, is due to hæmolysis; this is the obvious explanation, but it is possible that the increase is really due to failure on the part of the hæmatopoietic system to make use of the precursors of hæmoglobin. This requires further investigation. Dr. O. L. V. de Wesselow and Dr. Joseph Bamforth, of St. Thomas's Hospital, have been able to confirm the fact that in pernicious as opposed to secondary anæmia the plasma volume is normal and that no variation occurs in the course of treatment by liver. Lastly, we may draw attention to the brief paper by Dr. F. C. Eve, of Hull, who has been studying pernicious anæmia with the technique devised by Dr. Adrianus Pijper, of Pretoria, described in our columns [1] some years ago. Dr. Eve reports a decrease in the size of the red cells after liver feeding in cases of subacute combined sclerosis of the cord. He lays stress upon the importance of this mode of investigation in the diagnosis of pernicious anæmia; but the fact that he was able to demonstrate an increase in the size of the red cells in a child of 2, and also in a patient with leukæmia, suggests that the method should not at present be relied on to the exclusion of other means of diagnosis.

SUNLIGHT AND HEALTH.

A SUPPLEMENT to the issue of the *Times* of Tuesday, May 22nd, forms a valuable summary of our knowledge of the part which sunlight plays in the maintenance and promotion of health in far-reaching directions, and of its direct therapeutic value when artificially applied. The whole of this large reference is well covered in 40 fully illustrated pages; the general lessons in their application alike to natural and artificial sunlight are delivered by recognised authorities, and their value is indicated by careful editorial comment; while the contributions along special lines form a fair and full story of what applied science has been able to effect in many conditions which have hitherto defied our therapeutics. Essays by Mr. T. A. Webster on ergosterol, by Dr. Leonard Hill on the measurement of ultra-violet radiation, and by Prof. Sidney Russ on the electro-magnetic theory of life, will be valuable to medical readers, as they afford the scientific evidence which is relied upon when sunlight therapy, a comparatively new weapon in the practitioners' hands, is employed in particular treatments; the general benefits of balneological methods are exposed in articles by Dr. Fortescue Fox, writing on the British climate and British spas, and by many correspondents from France, Germany, Spain, Italy, Switzerland, Algeria, and Egypt, describing what centres in those countries can offer, special praise being due here to the descriptions by Dr. Kurt Huldschinsky of open-air culture and the practice of actinotherapy in Germany. A large part of the supplement is occupied with descriptions of th influence of access to the sun in improving general environment, and though the teaching may be obvious it is none the less valuable, especially if the information is absorbed by public authorities concerned with the building of schools, the provision of playing-fields, and the organisation of institutional life. The *Times* has done public and timely service in issuing this supplement.

[1] THE LANCET, 1924, ii., 367.

EPHEDRINE IN LEPROSY.

E. Muir and S. P. Chatterji have shown that the nerve pains which form such a distressing feature of advanced leprosy were relieved by the injection of 3–5 minims of 1/1000 adrenalin chloride solution. The benefit resulting from adrenalin suggested that ephedrine, which has the advantage of oral administration, might have the same effect, and in the *Indian Medical Gazette* for April Dr. Muir and his colleague are able to give a satisfactory report of its action. These nerve pains are believed to be caused by the presence of leprosy bacilli in the nerve trunks. In the quiescent stages a proliferation of the connective tissue cells takes place; when febrile reaction takes place the lepra cells are broken up naturally, or as the result of treatment a sudden engorgement of granular tissue occurs, and pressure on the axis cylinders is exerted. Were it not for these nerve reactions leprosy would be a comparatively painless disease, so that a drug which relieves the condition is to be welcomed. Ephedrine sulphate given in hard gelatine capsules in a single dose of 0·05 to 0·1 g. was in most cases sufficient to cause relief in 45 to 60 minutes and its action was maintained for 24 hours, or even longer. Nerve reactions may occur in the course of treatment with iodides, each dose causing pain which lasts from one to three days. If ephedrine is taken whenever the pain commences, the patient is able to continue treatment in comfort until the granulomatous condition is cleared up. The immediate action of ephedrine is attributed to contraction of the arterioles of the nerve trunks and relief of vascular engorgement. It is not yet clear exactly why it fails to relieve a minority of patients. A sequel of its use may be vertigo, and a small preliminary dose is advisable for this reason. Ephedrine has the advantage over opium preparations that the relief of pain is less transient and the effect on the general condition of the patient is beneficial.

ACUTE SYPHILITIC PHLEBITIS.

ACCORDING to Dr. Howard Morrow and Dr. N. N. Epstein,[1] who report a case seen by them in the syphilis clinic of the University of California, phlebitis is one of the unusual manifestations of syphilis, the veins, in striking contrast with the arteries, appearing to enjoy comparative immunity to this disease. Including the first reported cases, described in our own columns[2] by G. P. Girdwood, the writers have collected 45 observations of various forms of syphilitic phlebitis which they have classified into the three groups of early superficial phlebitis, nodular thrombophlebitis, and late phlebitis. Early syphilitic phlebitis, to which they confine their attention, appears as an inflammatory process involving the whole of a superficial vein, several segments of a vein, or a single segment. It has a tendency to be multiple, involving the veins of more than one limb and often progressing from one vein to another. The lower limbs are most frequently attacked, the internal saphenous usually being selected. The phlebitis develops within a few months of the chancre and may accompany or even precede the early secondary rash. As a rule the local and general symptoms are so slight that the condition is readily overlooked, or they may be severe, including nocturnal pains and constitutional disturbance. The skin over the affected area is usually reddened and occasionally there is slight œdema. The limb may be swollen, but does not pit on pressure. Early syphilitic phlebitis has a remarkable tendency to recur either in the original vein or in another in the same or opposite limb. Under specific treatment complete resolution occurs in two or three weeks. Complications are rare, and only one case of embolism has been recorded. The condition is much commoner in the male than in the female, for of 31 cases in which the sex is recorded 27 were in males and only four in females. Strain and alcoholism are supposed to be contributory factors. The chief pathological change is a proliferation of the connective tissue in the subendothelial layer which causes protrusion of the endothelium into the lumen of the vein. The *Spirochæta pallida* has been found in the lesions. According to Morrow and Epstein early syphilitic phlebitis is distinguished from the phlebitis due to other infectious processes by the lack of constitutional and local symptoms, the multiplicity of veins involved, the tendency to recurrence, the rarity of embolism, and the prompt response to specific treatment. In their own case the patient was an alcoholic blacksmith, aged 30, who developed phlebitis in the fourth month of syphilitic infection, the right calf being subsequently involved. Much improvement took place under arsphenamine, but the condition recurred when he resumed work, and a second but milder recurrence developed later. Recovery was eventually complete.

[1] Archives of Dermatology and Syphilology, March, 1928.
[2] THE LANCET, 1860, i., 619.

DISCOVERY OF ANOPHELINE BREEDING-PLACES.

IN a malarial area detection of the breeding-places of anopheline vectors may prove difficult, so that pointers to these spots are always welcome. Local variation in splenomegaly was, for example, used with significant effect by the late Dr. S. T. Darling[1] in a Brazilian village five years ago. On a large scale map he marked the homes of all children with enlarged spleens; incidence was far highest near the river on which the village lay, and mosquito larvæ were sought for and found in pools in the low land between village and river. Can a similar use be made of the impression among field workers that male anopheles do not stray so far as females from the water from which they emerged? Is it the case that, in collections of anopheles made from shelters during the day, the percentage of males to females is greater the nearer that shelter lies to the water where they passed their early life? Barber, Komp, and Hayne[2] investigated this matter three years ago. They found that, in over 34,000 specimens of *Anopheles quadrimaculatus* examined, the percentage of males to females was least among those caught in shelters accessible to a source of blood and greatest where no such source was convenient. This is, of course, a distribution such as would occur were males evenly distributed and females congregated close to the sources of the blood meals which they alone enjoy. The actual percentages of males found by these workers were: in animal houses inhabited at night, 6·7; in dwellings, 11·2; in chicken-houses, 17·8; in privies and under dwellings, about 30; in other shelters, 46. It may be that the somewhat greater percentage of females found in animal houses than in dwellings indicates a preference of these female anopheles for animal as against human blood. At all events the investigation leant no weight to the belief that the percentage of males in any shelter had a relationship to its distance from breeding-places. Swellengrebel,[3] investigating this point in the environs of Amsterdam, found that, among some 25,000 *A. maculipennis*, the percentage of males was highest in human habitations and, with the curious and perhaps fortuitous exception of places housing calves, lowest in uninhabited barns and lofts. It has, however, to be added that these last cannot have been far from food sources since 29 per cent. of females caught in them contained blood. More recently Swellengrebel, in collaboration with Rook,[4] has reinvestigated the matter, under the auspices of the Rockefeller Foundation, by the examination on this occasion of over 200,000 *A. maculipennis*. At Medemblik, where the work was done, antilarval measures protect a wide area. At its centre, 3000 metres from breeding-places, males constituted 8 per cent. of captures; at 1600 metres from breeding-places, 16 per cent.; and right among them, 20 per cent. Over these very large numbers, then, a certain relationship can be found between the percentage of

[1] Jour. Amer. Med. Assoc., March 17th, 1923, p. 740.
[2] Pub. Health Rep., U.S. Pub. Health Service, 1925, xl., 105.
[3] Bull. Soc. Path. Exot., 1927, xx., 121.
[4] Rivista di Malariologia, 1928, vii., 7.

ales captured and the distance of the shelter from eeding-grounds. Unfortunately the influence of her factors is so much greater than that of distance at this percentage, whether for *A. maculipennis* or *quadrimaculatus*, cannot, with the relatively small llections usually possible, be used as a signpost to id the hygienist in the field to the breeding-places of ese mosquitoes. Whether this negative conclusion of more general application only wider investigation n show.

ANTISCARLATINAL SERUM AND RELAPSE.

IN an analysis of relapses occurring at Ilford olation Hospital after an attack of scarlet fever ee p. 1060), Dr. A. H. G. Burton and Dr. A. R. almain come to the conclusion that these are more equent in cases treated by antiscarlatinal serum. 1 432 such cases they have found the relapse rate be 4·16 per cent., which is high compared with the nerally accepted rate of from 1 to 2 per cent. It not easy to arrive at an accurate relapse rate of is disease since occasional errors in the original agnosis arise, and many relapses are mild and metimes difficult of recognition. However, the 16 per cent. of relapses in this series of cases can rdly be in doubt since rise of temperature, a nctate erythema, congested fauces, and a peeling ngue were all present. It would be interesting to low whether the relapses were, as is usual, milder an the primary attack, and what relation the verity of the initial attack had to the relapse. They y that antiscarlatinal serum appears to have the finite effect of increasing the number of Dick-sitive reactors during convalescence, and evidence this is given. This is not surprising since the titoxin, being supplied artificially, the need for e human mechanism to set up its defence is less. ey conclude that cases of scarlet fever admitted isolation hospitals should be Dick-tested at the d of the third week, and that it is unjustifiable to tain cases of scarlet fever in a general ward who ve a marked Dick-positive reaction during con-lescence, but that such cases should be isolated or munised. That these conclusions are reasonable n hardly be doubted, especially when antiscarlatinal rum has been administered and so increased the ance of relapses, as shown by the authors. At e present time scarlet fever, being the mild disease at it generally is, the question arises whether it desirable to administer antiscarlatinal serum to cases. There is, however, a tendency towards reased severity to be noticed in certain areas and ew toxic cases have been reported. Doubtless Drs. rton and Balmain had their special investigation view when they gave serum to every case on mission; the opinion held by most observers is at serum treatment may be reserved for the more ere attacks.

RBON MONOXIDE FROM MOTOR EXHAUSTS.

THE rapid increase of motor traffic in all civilised ntries has led to so many mishaps that world-wide ention has been given to the question of the sence of carbon monoxide in the air, not only of ages—where the likelihood of its occurrence is no means as well recognised as it should be—t of the streets themselves. A correspondent the United States of America recently cited [1] some a collected in 14 large cities by officers of the blic health service. Very small, but still deter-nable, amounts of carbon monoxide have been nd in the air of Paris, and the same order of purity has, we are informed, been found in the air London streets by the research chemists of one of London gas companies. The day is probably far tant when the air of our streets is likely to become gerous fron this cause, even if no measures are en to reduce the risk, but a recent occurrence in of the tunnels under the Thames has given minence to the very different atmospheric conditions existing in these sub-aqueous highways now and at the time when they were constructed. The responsible authority appears to be fully alive to the necessity for coping with the problem, not an easy one, of ventilating these tunnels. Everyone will agree that their ventilation should be adapted to modern conditions, but there seems no reason why an attempt should not be made to reduce the amount of carbon monoxide entering the air. This could be done without any public regulation if motorists would make a rule of stopping their engines whenever their cars are brought to a standstill in a confined space. This would seldom mean any real delay as an engine which must of necessity have been running for some time would hardly cool so rapidly as to give difficulty in starting. Motorists as a class are inclined to take risks in this respect which no chemist or medical man would lightly incur. As regards the general question of carbon monoxide in the air of streets, it is consoling to note that MM. Cambier and Marcy discovered no sensible increase in the carbon monoxide content of the air of Paris over the amounts found by A. Gautier in 1877, except when samples were taken at the level of and near the exhaust of a car, or during a traffic block in a one-way street. At the junction of the Place de l'Opéra and rue Auber, as much as 13 parts of CO per 100,000 were found when the number of vehicles passing was 2600 per hour; in rue Mogador, a narrow one-way street, five parts were present during a traffic block. But these amounts represent conditions which are quite transitory.

[1] THE LANCET, April 28th, p. 881.

ANATOMICAL NOMENCLATURE.

AFTER an interval of some years Dr. Cuthbert Morton has renewed his campaign on the present condition of terminology in anatomy. His letter appeared in THE LANCET of May 12th. Concerning the general questions involved in this matter, we see no reason to alter the opinions which we published in 1920, when Dr. Morton had contributed a paper on the subject to our pages. We may say, however, with reference to the item in the agenda of the Anatomical Society to which he refers in his last letter, that we are informed that it was merely a private motion brought by a member at an ordinary meeting, in which he sought for some expression of opinion from his colleagues, and that even then its discussion was, after argument, postponed to a future occasion. Under these circumstances we cannot, of course, say more about it, but it is evident that the facts do not in any way warrant the direful assumptions and forebodings which darken the greater part of Dr. Morton's letter. No one can help feeling sympathy with Dr. Morton in his sorrowful contemplation of the scene of chaos, but, on the other hand, we have a suspicion that the confusion is not so confounding as is often alleged, and that the cry of urgency is perhaps a little overdone. In any case the terminology fated to survive must evolve itself from the materials at hand, and the introduction of another system or set of "principles," although it may add to the material, will certainly not lessen the confusion. Anatomists are as much concerned as anyone with this question, but they seem to be aware of the fact that an international nomenclature is really an impossible ideal. Moreover, as we have pointed out already, their views embrace a wider field than that in which medicine is interested or concerned, and for this reason we would not anticipate much useful result from a conference between them and their clinical brethren. We are in cordial agreement with Dr. Morton's plea for wider use of the English tongue, and we fancy that the competent teachers of anatomy employ their native language much more than might be imagined from a study of many text-books. We must also, like everybody else, admit that the adoption of sound principles of nomenclature would afford a solid foundation for building upon; but as each individual would have his own views on what might be a sound principle, and what could not be so

considered, we fear that the result of an effort to make such a foundation would be far from a success. One is almost tempted to think that the best service to the cause would be rendered by leaving it alone to work out its own salvation by the natural processes of fitness and survival, and to refrain from adding to the number of subjects of dispute.

SERUM TREATMENT OF DIPHTHERIA.

IN an interesting paper on the Control of Diphtheria in Institutions read before the Naval, Military, and Air Force Hygiene Group of the Society of Medical Officers of Health on May 3rd, Surgeon-Commander S. F. Dudley said that to withhold antitoxin until the bacteriological report came was criminal, and that the diphtheria throat swab had been in many ways a curse. These are emphatic statements which it would be well for the profession to ponder over, for there is no doubt that many of the deaths caused by diphtheria are due to the medical attendant awaiting the result of a bacteriological report. Within the past few years attention has repeatedly been drawn to the dangers attending this practice, and there was an annotation in THE LANCET of May 28th, 1921, emphasising this. In the 1928 edition of Goodall and Washbourn's "Infectious Diseases" Dr. E.W. Goodall writes as follows:—

> "Now the writer desires to lay down most emphatically the rule that every endeavour should be made to arrive at a diagnosis before recourse is had to the swab and the culture tube. Many a life has been lost because the medical attendant has waited for the result of a culture or accepted a first finding, negative as regards diphtheria bacilli, as conclusive that the disease was not diphtheria."

Since the annotation referred to was written there has been in London, taking it as a whole, for it appears less evident in certain areas, a slowly growing tendency not to wait for a bacteriological report, and this should receive every encouragement from medical officers of health. Nevertheless it is still regrettably common for diphtheria patients to arrive at the hospitals of the Metropolitan Asylums Board without antitoxin treatment, whose admission has been delayed by the result of the bacteriological examination. It should ever be present in the mind of the medical man how rapidly the danger to life augments in diphtheria if treatment is delayed. It is well to recall MacCombie's figures of some 7000 cases which were adequately treated with antitoxin on admission to hospital. The death-rate of those treated on the first day of the disease was 0·5 per cent.; on the second day, 4 per cent.; on the third day, 10 per cent.; on the fourth day, 15 per cent.; and on the fifth and succeeding days, 16 per cent. Diphtheria is by no means always easy of diagnosis, and it may be difficult to decide upon the attitude to adopt, but if there is doubt the case should be regarded as diphtheria and dealt with as such. Particularly is this so if the condition of the throat shows signs of severity, and it should be a golden rule not to postpone treatment by antitoxin in any acute throat condition which might be diphtheria unless one feels assured that the sufferer will certainly recover. The strong and salutary words of Surgeon-Commander Dudley about the swab recall the statement once made by an authority on diphtheria: "Were it not that the diphtheria bacillus had given us antitoxin it would have been well had it never been discovered." Yet it must be remembered that though the swab is in many ways a curse, because it is so frequently misused, it is nevertheless a valuable addition to diagnosis if used in the proper way to confirm diagnosis, made or suspected by the clinician, after treatment has already commenced.

The fear that unpleasant reactions will follow injection of serum may sometimes influence the decision, and therefore deserves a moment's consideration. To the various accidents which result from the use of antitoxin the term anaphylaxis is sometimes applied, but it is doubtful whether anaphylactic shock ever occurs in man, and in the words of the Medical Research Council's report on diphtheria published in 1923, "serious accidents after inoculation or reinoculation with antitoxins are so rare that no physician ought ever to be driven by the fear of them to withhold antitoxin in any case of diphtheria." This report pointed out that both shock and serum sickness tend to be somewhat more frequent when the individual has had one or more previous injections, and when the antitoxin is given intravenously. When serum is injected into the body an interval of some 12 to 14 days elapses before the subject is rendered supersensitive. How long his supersensitive condition remains is unknown, and sometimes, of course, it does not develop at all. A good rule, however, is that if the patient has previously—more than ten days before—had an injection of serum an attempt at desensitisation should be made. The method usually adopted is as follows: hypodermic injection of 0·5 to 1·0 c.cm. of the therapeutic serum is given, followed by the full curative dose after an interval of five or six hours. Where the practitioner thinks it dangerous to delay for so long he may adopt an alternative method by which a dose of 0·5 to 1·0 c.cm. of the serum is followed ten minutes later by a slightly larger dose, and gradually increasing quantities are given at intervals of about five minutes until the appropriate amount has been injected. In practice it is found that shock is extremely rare whether the person has previously had serum or not.

THE LUNACY LAW OF NEW SOUTH WALES.

THE annual report of the Inspector-General of Mental Hospitals for New South Wales opens this year with an urgent plea for amendment of the State legislation. The changes in the treatment of the mentally sick during the last 30 years have been so far-reaching and rapid that any Act dated 189 must be gravely behind the times. Indeed, this particular one was regarded as out-of-date in 1902 and ever since then the matter has been repeatedly brought to the notice of the Minister, but so far without effect. There is, however, a draft Bill before the Assembly and this, if it becomes law, will provide for persons suffering from mental disease in accordance with the degree of restraint they require. Thus it will be possible to treat patients in the early amenable stages before they need certification. The classification of patients into three groups compares with, although it is not identical with, the grouping recommended by our recent Royal Commission. Those who are amenable to treatment without requiring detention are to be dealt with in ordinary hospitals or special wards. Those whose own interest demand their detention will be kept in special hospitals, while the older mental institutions will continue to receive those who require compulsory detention for their own protection or for that of the public. The property of the first two classes would not be controlled except at the patients' own request, and they would be free to give seven days' notice of their desire to leave the hospital. Laggard as this country may be in some matters respecting mental health legislation, we have a Mental Defective Act and can well understand that the lack of one in New South Wales creates a serious situation. A Bill was prepared some time ago and planned to put under the Education Department defectives of school age and those likely to benefit by instruction, while the older and hopeless cases would be dealt with by the Inspector-General of Mental Hospitals. Other reforms urged in the report as overdue are the establishment of a colony for epileptics and of a committee of psychological experts to examine criminals. In actual practice, however, as Sir John Macpherson pointed out in his Maudsley lecture (p. 1074 of this issue), psychiatry in New South Wales is both advanced and untrammelled. Psychiatric clinics have been established at a number of general hospitals. Medical officers are not appointed permanently until they have secured their diplom

in psychological medicine; a doctor and two nurses are to be sent to America to study occupational therapy, and a system of social service work is under consideration. The Psychiatric Clinic in Sydney, to which Sir John Macpherson was visiting physician, is an example of a modern voluntary hospital which was established without legislative enactment and finds itself happily free from irksome restriction. Voluntary patients are found in all the mental hospitals, but, like our own county asylums, these institutions have no legal right to receive uncertified patients. The new Bill would remedy this anomalous position. The legislature will undoubtedly be making a grave mistake if it does not support its enthusiastic medical staff by the necessary enactments.

HIDEYO NOGUCHI.

WE much regret to learn of the death of Dr. Hideyo Noguchi from yellow fever at Accra on May 21st. Dr. Noguchi went to the West Coast in November of last year to take part in the combined investigation of African yellow fever, in which Prof. Adrian Stokes lost his life last September, and was expecting shortly to return to America. During the last ten years Dr. Noguchi has worked extensively on the disease in Central and South America where his researches culminated in the discovery of a spirochæte to which he attached ætiological importance, which he was able to grow on a large scale in artificial culture and by means of which it was hoped to prepare an efficient vaccine or serum to supplement the sanitary measures which have nearly eradicated the disease in the Americas. The objects of the West African inquiry were to find out whether the disease there was really the same as in Central America (answered already, we believe, in the affirmative), whether it was transmitted by a specific mosquito in the same way, and whether its source was some reservoir of animals from which human infections were derived. The early work of the West African Commission entirely failed to find any signs of a spirochæte and proved as definitely as may be that the disease could be transmitted by an invisible virus by the agency of mosquitoes. It was doubtless a desire to clear up this discrepancy which took Dr. Noguchi to Africa with such unhappy results. His exceptional skill and experience with spirochætes and other parasites will be greatly missed by those who are trying to clear up what remains of the yellow fever problem. Dr. Noguchi was born in Japan in 1876 and educated at Tokyo University. He first went to the United States in 1901 as assistant lecturer on pathology to the University of Pennsylvania. In 1903 he became research assistant at the Carnegie Institute and later joined the staff of the Rockefeller Institute, of which he has become one of the most distinguished members. He will always be remembered for his pioneer work on the cultivation of spirochætes outside the body, for the discovery of the *Spirochæta pallida* in the brain in general paralysis, and in the spinal cord in tabes, and for his researches on yellow fever and on the small-pox virus; the successive volumes of the *Journal of Experimental Medicine* are good enough testimony to his fertile brain and clever hands.

It may be as impossible as it was in the case of Prof. Stokes to find out exactly how Dr. Noguchi took the infection. Possibly it is unwise for any but the young and robust to embark on such inquiries; we recall the deplorable loss of A. W. Bacot from typhus and, on the other hand, remember that Walter Myers died of yellow fever at Para when he was in the 'twenties. The native animals in West Africa have proved entirely refractory to the infection; the discovery that macaque monkeys from India were very susceptible gave the Commission an invaluable method of investigation without which any substantial progress would have been impossible. But it may be that the provision of such a suitable soil has enhanced the virulence of the parasite and made experimental work particularly dangerous—a problem which Dr. Noguchi would have delighted to attack. This second tragedy within a year makes plain the dreadful nature of yellow fever and the fact that even experienced workers are unable to organise investigations in endemic areas without grave risk.

MYOPIA IN JEWISH CHILDREN.

IN a paper entitled Race, Sex, and Environment in the Development of Myopia,[1] Dr. A. Sourasky advances statistical arguments to show that there is no connexion between the development of myopia in children and the time they spend in reading, even reading in an unfavourable hygienic environment; but rather that there is something in the Jewish race which is peculiarly favourable to the development of myopia, and that among children, both Jewish and non-Jewish, the boys are considerably more liable to be affected than the girls. The numbers on which his conclusions are based are not very large —1649 Jewish children and 600 non-Jewish, all in East London—and Dr. Sourasky does not maintain that his thesis is finally proved; but it is not easy, however, to find a flaw in his argument. It appears that the Jewish boys (not the girls) of East London, in addition to attending the ordinary elementary day school, also have classes for the study of Hebrew, lasting 2½–3 hours, on four evenings every week, the lighting and other conditions under which these classes are held being often very bad. The conclusion that suggests itself at first is that the excess of myopia among Jews, and the excess in Jewish boys over Jewish girls, has to do with an excessive amount of study in a bad light. When, however, the ages at which defective vision is found among the Jewish and the non-Jewish children is compared, it is found that the heavy incidence of defect among the Jewish boys is apparent at the very beginning of school life, at the age of 6, and is hardly less then than towards the end of school life. Excessive reading, therefore, so it is argued, cannot have anything to do with the short sight. As far as we know, it has never been suggested that there are peculiar conditions affecting Jewish infants prejudicially more than non-Jewish, which might account for the excess of myopia at the age of 6; this is a point which deserves attention. Dr. Sourasky's figures, however, as far as they go, do illustrate the facts that there are a considerable number of cases of myopia which date from an age prior to the commencement of school life, that their development is largely independent of environment, and that they are especially prevalent in the Jewish race. At the same time the gradual increase of myopia during school life is a well-attested fact, and there is considerable evidence to show that close application to books is one, at any rate, of the factors causing it. In matters of school hygiene to act on any other assumption would be, at present, to say the least of it, premature. In the meantime we hope that others will collect series of cases, for whereas Dr. Sourasky's figures, both for Jews and non-Jews, show a higher proportion of myopes in boys than in girls, collected figures are extant in which no such difference appears.

THE ROYAL SOCIETY'S CONVERSAZIONE.

OF the two conversazioni given annually by the Royal Society at Burlington House, the first was held on the evening of May 17th. Though not, perhaps, so generally attractive as on former occasions, it included many exhibits of medical interest. Dr. R. J. Ludford showed some mice whose ears, tails, noses, and skin had become definitely blue after an injection of trypan blue, and it was demonstrated that while all the normal cells had taken up the pigment, little or none could be found in implanted neoplasms. Any interpretation of this phenomenon must, of course, take into account the fact that the new growths were not spontaneous, but purely experimental. The Pharmaceutical Society showed a

[1] British Journal of Ophthalmology, April, 1928.

collection of mediæval materia medica, including peacock excrement, adder, sharks' and wolves' teeth, millipedes, and mummy. In the absence of modern biological standardisation dishonest traders were apt to substitute recently embalmed bodies for the more mature article. Much attention was attracted by an exhibit, in which Dr. David Keilin, F.R.S., showed that all bacteria, save the anaerobes, yield a pigment which in iron content, chemical structure, and absorption bands, has analogies with hæmoglobin, and which takes part in the respiratory exchange of the organisms. Another effective demonstration, by the British Mosquito Control Institute, Hayling Island, was one in which mosquito larvæ and pupæ were seen dancing in shadow-play on a screen. An exhibit from Kew Gardens of the plant sources of chaulmoogra oil, and an account of their distribution, which is almost entirely confined to the Indian Empire and neighbouring British territories, was a reminder to the profession of the useful work which Kew is doing in their interest. The almost incredible parasitic infection of Scotland's stranded whales, whose guts were nearly blocked with bolbosoma; the excellent preparations of chromosomes in wheat-pollen, demonstrating the aberrations in chromosome content which lead to mutations, and many other exhibits touched upon our professional activities. The exhibition, in fact, gave good grounds for the conceit that the medical career fits a man, better than almost any other, to take an intelligent interest in the multiple activities of science.

THE Sanitary Committee of the City Corporation have recommended the appointment of Dr. W. M. Willoughby, now medical officer of health for the Port of London, as medical officer of health of the City of London.

THE next social evening of the Royal Society of Medicine will be held on Monday, June 4th, at 1, Wimpole-street, W. Sir James Berry (the President) and Lady Berry will receive the guests at 8.30 P.M., and at 9.15 Mr. C. Leonard Woolley will give an illustrated address on Recent Excavations at Ur of the Chaldees.

THE second annual Macalister Lecture of the London Clinical Society will be delivered at the London Temperance Hospital on Thursday, June 7th, at 8.45 P.M., by Sir Berkeley Moynihan, President of the Royal College of Surgeons of England. His subject will be Medicine in Art. The lecture will be open without ticket to members of the medical profession and their friends, but the hon. secretary, Mr. Winsbury White, 51, Harley-street, W. 1, will be glad to receive notice from those who hope to be present.

DONATIONS AND BEQUESTS.—The late Sir William Forwood, of Bromborough Hall, Cheshire, left among other bequests £1200 to the Hospital for Women, Liverpool; £1000 to the Liverpool University; and £250 each to the Royal Infirmary, Liverpool, the David Lewis Northern Hospital, the Royal Liverpool Southern Hospital, and the Stanley Hospital, Liverpool.—The Glasgow Royal Maternity Hospital has received £40,000 for endowment purposes from Mr. A. Walker, of Newart Castle.—Mr. F. B. Sharp, of Cupar, Fife, and his sister, Miss Christina Sharp, have given annuity bonds for £14,000 and £6020 respectively for the further endowment of the new maternity hospital in connexion with the Dundee Royal Infirmary.—Sir Otto Best has given £10,000 towards the £40,000 for which the British Red Cross Society are appealing to establish in London a clinic for the treatment of rheumatic diseases. This gift with other gifts received brings the total amount raised to date to £33,700.—Lord Howard de Walden has given £10,000 to the Mother-Saving Campaign instituted by Queen Charlotte's Hospital, London.—Mr. and Mrs. Richard Dearden Ward, of Sapling Grove, Halifax, on the occasion of the sixtieth anniversary of their wedding, gave £1000 to the Halifax Royal Infirmary.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXVII.

THE TREATMENT OF BRONCHIECTASIS.

FROM the point of view of treatment, bronchiectasis may be classified into two main types: (1) obstructive; (2) non-obstructive.

Obstructive Bronchiectasis.

The causes of obstructive bronchiectasis are foreign body, pressure by tumour or aneurysm, cicatrisation, a malignant or innocent growth in the bronchus. Of these foreign body and an innocent tumour are alone amenable to treatment. Bronchoscopy must be employed whenever there is the slightest possibility of the bronchiectasis being due to obstruction. Evidence of this may be obtained from the history of the case or the employment of lipiodol injections. If either of the above conditions is found it must be dealt with surgically. Even after successful removal treatment on the lines about to be described for non-obstructive bronchiectasis will probably prove necessary.

Non-obstructive Bronchiectasis.

Preventive Measures.—A common cause of bronchiectasis appears to be the after-effects of unresolved broncho-pneumonia. It is, therefore, essential to treat this disease adequately. Long convalescence at the seaside, or some warm dry place in the country, with much rest and later on bathing and sun baths, is indicated. If this regime does not bring about complete resolution diathermy treatment should be tried. A course of vaccines may help. If all these measures fail, a temporary collapse of the affected lung by artificial pneumothorax should be considered, the patient being placed under the healthiest possible conditions of living during the treatment. Sanatoriums for chronic non-tuberculous diseases of the lung are needed.

The Recognition and Management of Established Cases.

Bronchiectatic dilatation may exist with slight symptoms and equivocal physical signs that are in no way pathognomonic. There may be no more than cough, some expectoration and occasional streaks of blood. It is only by the injection of lipiodol and subsequent radiography that the diagnosis in such cases can be made. The general principles of treatment have next to be considered. The essential underlying cause of all types of bronchiectasis, whatever hypothesis may be held of the mechanism of dilatation, is an inflammatory process in the walls of the bronchi. Our first aim is to overcome this inflammation; our second is to close the cavities if necessary and if possible, or to prevent their extension. The following are the methods that may be adopted:—

General Hygienic Treatment.—Prolonged climatic treatment is essential in a warm seaside or country place. Fresh air is important and also rest, especially while the temperature is raised. As in the preventive treatment, bathing and sunbaths may be allowed after a few weeks. If no sun is available ultra-violet rays may be employed. Care must be taken of the teeth, throat, nose, and its accessory sinuses, and any focus of infection therein must be removed. The diet must be full and well balanced.

Diathermy applied to the affected part is well worth trying.

Postural Treatment.—Two or three times a day the patient must lie with the head and shoulders lower

an the rest of the body, the pus will then flow into e larger bronchi, excite a cough reflex and so aid emptying the dilatations. In some cases it is well let the patient lie for some time with the foot of e bed well raised. This treatment must be carried it thoroughly and conscientiously.

Creosote Chamber.—This is an excellent measure the patient is not too ill or debilitated. By pro-king cough the creosote helps to expel the pus. It so tends to render the breath less offensive. Fre-iently a crude creosote chamber can be improvised an outhouse in the patient's garden.

Vaccine Treatment.—I am doubtful of the value vaccine treatment in definite bronchiectasis. I ve seen some alarming reactions and am a little raid of vaccines in this condition. If they are ied it must be with great caution, starting with nall doses and increasing them very gradually.

Medicinal Treatment.—(*a*) *Inhalation:* A few drops the following solution—carbolic, chloroform, eosote, 2 parts, iodine and ether, 1 part, placed in Yeo's inhaler and inhaled for increasing periods time render the breath less offensive and may have antiseptic action. (*b*) *Drugs by mouth:* Creosote capsules may be given by mouth in increasing ses up to minims 20 or 30 three times a day. uaiacol carbonate, ipecacuanha, oil of sandalwood, rpentine, garlic, or arsenic may be tried. (*c*) *Intra-acheal injections:* Many substances have been jected into the trachea, such as preparations of enthol or menthol and guaiacol in oil. More cently gomenolised oil, 1 to 5 per cent., and lipiodol ve been used in this way, but their value is uncer-in. In many patients it is a very easy matter to ject 5 to 20 c.cm. of lipiodol into the lung by the oral ethod. The patient sits on a chair with the tongue otruded and held while the oil is slowly injected er the back of the tongue, the patient being couraged to breathe deeply and to relax. In a lerant subject the whole of the injection will flow once into the right or left lower lobe as desired thout the least difficulty. No cocainisation is cessary. Other oily preparations can be injected the same way. In my opinion a further trial of ese methods should be made.

Collapse Methods.—If the above methods fail me form of collapse therapy will be indicated. e simplest of these is artificial pneumothorax. this is successful and produces the desired result e problem will usually arise how to make the collapse rmanent. In certain cases, especially in children, seems that a temporary collapse will cause a great provement and appear to arrest the progress of e condition. Several such results have been reported m different parts of the world and I have observed e same thing in my own clinic. This was before e days of lipiodol, however, and it is a matter of mmon knowledge that to differentiate between imple fibrosis and slight bronchiectasis is impossible thout the use of lipiodol. Nevertheless, it is not ficult to understand how a temporary collapse ay tend to cure even in definite early bronchiectasis, the bronchi will be relieved of strain and stresses ile the subacute inflammatory process subsides. a rule, however, a temporary collapse will be sufficient. A life-long pneumothorax is impracti-ble even if it were possible, and unfortunately bronchiectatic dilatations the walls of the cavities ll not adhere as they do in tuberculosis after mpression. There are two possibilities: (*a*) con-rting the pneumothorax into an oleothorax; (*b*) lapse operations.

By *oleothorax* is meant oil in the pleural cavity. e oil that has been most commonly employed is ve oil containing 5 per cent. of gomenol. This ll remain unabsorbed for at least six months and lls are therefore needed only at long intervals. e oil remains sweet and apparently unaltered. e discomfort to the patient is surprisingly small. e of my patients, with his left pleural cavity completely filled with oil, has been doing full work for over two years and he complains of no discomfort.

Collapse Operations.—If the disease is basal and the methods described above have not proved successful *phrenic evulsion* should be first considered. It is a simple procedure, has been performed probably thousands of times, and there have been few compli-cations. If it does not cure the disease no harm has been done, as it is an excellent preliminary to pro-cedures about to be described. If the disease is not basal but definitely localised in some other part of the lung, *pneumolysis* is the operation of choice. It involves little or no shock and no mutilation. Per-formed as it may be from an axillary approach, no visible scar results. The objection to this otherwise ideal procedure is that no really satisfactory packing substance is known. Paraffin and fat are most commonly employed, but both are apt to be extruded little by little through a pin-hole sinus. If this fails, or if the disease is widespread, *thoracoplasty* must be considered. This, however, is a big and a mutilating operation and demands very careful consideration before it is embarked upon. Never-theless, in suitable cases and performed skilfully, the operation gives the patient what is probably, at the present time, the greatest chance of complete and permanent recovery. The collapse to be successful must be very thorough. It may be necessary after the complete paravertebral operation to resect ribs anteriorly as well. Amyloid disease, a toxæmic or degenerative condition of the myo-cardium, pyæmic abscesses in other parts must be carefully excluded, before such operative procedures are advised. *Rib mobilisation* used to be performed before thoracoplasty achieved its present popularity, and I can recall one case particularly where a striking cure was obtained by this method.

Removal of the Diseased Area.—Attempts have been made to remove the affected lobe by simple lobectomy or cautery lobectomy. This method is still in a tentative and experimental stage; theoretically it is an ideal process for the purpose, and when the technique improves and the operation becomes safer it will probably be employed extensively.

Drainage of a Large Bronchiectatic Cavity.—When the symptoms appear to be due chiefly to a very large single cavity, drainage may be attempted. This may relieve some of the most distressing features, dimin-ishing very considerably the amount of pus expec-torated. For this operation it is essential for the two layers of the pleura to be firmly adherent, as in drainage of a pulmonary abscess. A rib is resected, the ribs above and below are retracted, and the parietal pleura is carefully exposed, any injury to it being avoided. If not adherent the parietal layer of the pleura can usually be seen moving upon the visceral layer, or it can be lifted up with blunt forceps. If it is found free, the external surface of the parietal pleura is painted with iodine and packed with iodine or iodoform gauze, and the wound is lightly stitched up. After four to seven days the two layers of pleura will be found adherent. The lung may then be incised and the cavity drained.

Advanced Bilateral Disease.—If the disease is well established on both sides, none of the collapse methods will avail. All that can be done is to employ the other measures outlined above. If one side has advanced disease and the other side is but slightly affected, it will be a matter of judgment whether it is better to employ some form of collapse therapy on the worse side in the hope of arresting the further extension of the disease. Prolonged medical and climatic treatment must in any case follow. In bilateral disease, however, operative procedures must not be undertaken lightly.

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Special Articles.

THE BRITISH PHARMACOPŒIA.

REPORT OF SUBCOMMITTEE.

THE existing law as to the preparation and publication of the British Pharmacopœia is confined to a single section of the Medical Act of 1858 and two sections of the Medical Act of 1862. The effect of this legislation is to impose upon the General Medical Council the duty of causing a British Pharmacopœia to be published under their direction, and of causing it to be altered, amended, and republished as often as they think proper.

In July, 1926, a subcommittee of the Committee of Civil Research was appointed with the object of ascertaining whether it is desirable to make any alteration in the law or practice relating to the preparation of the British Pharmacopœia and to its adaptation to the requirements of the British Empire.

The personnel of the subcommittee was as follows: Mr. H. P. Macmillan, K.C. (chairman), Lord Dawson, Sir Donald MacAlister, Dr. H. H. Dale, F.R.S., Mr. Edmund White, F.I.C., Dr. H. G. Dain, and Mr. A. F. Hemming. Their report has now been issued. It consists of an introductory section describing the procedure adopted, an historical survey of the pharmacopœia in this country, before and after the Medical Acts, and an account of the financial arrangements governing its production. Criticisms of the present system are dealt with and the proposals of the subcommittee set out. The adaptation of the British Pharmacopœia to the requirements of the British Empire are then discussed, and the report ends with the following summary of the principal conclusions and recommendations arrived at:—

1. That it is not necessary or desirable to make any alterations in the existing law relating to the preparation or publication of the British Pharmacopœia, but that the practice in the matter be altered in conformity with the recommendations which follow.

2. That the General Medical Council set up forthwith a Selection Committee to be charged with the duty of selecting persons to form a new body to be designated "The Pharmacopœia Commission."

3. That the composition and functions of the Selection Committee be as follows:—

(*a*) The Selection Committee should consist of four persons nominated by the General Medical Council, three persons nominated jointly by the Council of the Pharmaceutical Society of Great Britain, the Council of the Pharmaceutical Society of Ireland, and the Council of the Pharmaceutical Society of Northern Ireland, and two persons nominated by the Medical Research Council; the representatives in each case to be chosen by the nominating body either from among or from outside its membership.

(*b*) The Chairman of the Selection Committee should be appointed by the General Medical Council from among their four representatives.

(*c*) The Selection Committee so appointed should select persons representative of the various appropriate departments of knowledge and experience to form the Pharmacopœia Commission.

(*d*) The number of persons selected to form the Pharmacopœia Commission should not be prescribed, but should be left to the discretion of the Selection Committee, who should have power from time to time to select additional persons for permanent or temporary membership, including representatives of India or the Dominions.

(*e*) The Selection Committee should submit to the General Medical Council for approval the name of one of the selected persons to be Chairman of the Commission.

4. That the manner of appointment, composition, and functions of the Pharmacopœia Commission should be as follows:—

(*a*) The Pharmacopœia Commission should be appointed by the General Medical Council, its members being persons whose names are submitted to the Council by the Selection Committee.

(*b*) The Pharmacopœia Commission should be a permanent body with an office and suitable secretariat, and the work of collecting and collating material, preparing reports and conducting correspondence with a view to the preparation of future issues of the Pharmacopœia should be carried on continuously.

(*c*) The actual work of preparing future issues of the British Pharmacopœia should be undertaken by the Pharmacopœia Commission under the general direction of the General Medical Council; on each revision the completed volume should be submitted by the Commission to the General Medical Council for approval and when approved it should be issued as heretofore with the authority of the General Medical Council.

(*d*) The Pharmacopœia Commission should have power to appoint subcommittees, and to include among the members of such subcommittees experts in any particular branch, whose assistance may be desired, although they may not be members of the Commission.

5. That in future the British Pharmacopœia should—

(*a*) Be revised and reissued at stated intervals of ten years, supplements being issued between the successive editions as required.

(*b*) Contain only standard drugs in general use throughout the Empire.

6. That where it is desired in any part of the Empire to sanction the use of particular local drugs, or alternative preparations not included in the British Pharmacopœia, they should be left to be effected by the Governments concerned by the issue of local supplements or addenda.

7. That the Governments of the Dominions and of India be requested by the General Medical Council, through the appropriate channels, to set up or cause to be set up responsible and representative committees to coöperate with the Pharmacopœia Commission in the revision of the British Pharmacopœia, if they desire and are willing to take part in the work.

8. That at any rate until the results of the publication of the next revision are seen, the funds necessary for carrying on the work of the Pharmacopœia Commission be provided by the General Medical Council, who should receive the proceeds of all sales of the Pharmacopœia, a separate account being kept.

The subcommittee, in presenting these conclusions and recommendations, ask that they shall be considered in the light of the more detailed exposition of their views embodied in the report (Cmd. 3101, 1s.) which can be obtained from H.M. Stationery Office. The report is signed by all the members of the subcommittee.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the General Council of King Edward's Hospital Fund for London was held at St. James's Palace on May 15th when the Prince of Wales, who presided, read the following message from the King:—

"The King is glad to hear of the results achieved by the special distribution of the sum of £255,000 received from the estates of the late Mr. and Mrs. John Wells, which has helped the hospitals of London to provide 1600 additional beds and to meet other urgent requirements. His Majesty regards this as a striking proof of what can be done by a Central Fund, when it is in a position to make grants to hospitals which especially need financial assistance, and where the utmost use will be made of the help thus given."

In addressing the meeting the Prince of Wales said that the accounts showed, not for the first time, a better result than was anticipated in November. Since the end of the year the capital had been increased by a very generous donation of £10,000 from Mr. J. J. Crosfield, with a request that it should be invested. When Mr. H. W. Marshall gave £10,000 Conversion Stock last year, in connexion with the thirtieth anniversary, he asked that it should form a separate fund to be called the Marshall Fund, to which members of his family might, if they so desire, add further sums. A bequest by a member of Mr. Marshall's family had since been added to the fund thus created. The inquiry by the Pay Beds Committee into the question of hospital accommodation for the middle and professional classes was nearly finished, and the report was being prepared. The conclusions, whatever they may be, would

based on a study of pay beds as they now existed at a number of hospitals in London. The statistical report showed that in 1926 there were nearly 900 pay beds at 73 hospitals. Any suggestions the Pay Beds Committee might make for the future would thus be based on the experiments, if he might so call them, of the past and the present. The final list of grants out of the legacies of the late Mr. and Mrs. John Wells was the end of a most useful piece of work which began in 1924. The last instalment of the two legacies had just been received, and the combined total had come to £255,000. His Royal Highness concluded by referring to the loss to the Fund by the death of Lord Cave, Sir William Church, and Sir John Craggs. In the place of Sir Francis Champneys, who had retired after 17 years' good service, he (the Prince) had appointed Mr. Eardley Holland; Lord Iveagh he had appointed as a member of the Council.

The Finances of 1927.

Lord Revelstoke (the hon. treasurer) then moved the adoption of the accounts for 1927, which was seconded by the Rt. Hon. M. C. Norman, and carried unanimously. The Earl of Donoughmore (chairman of the Management Committee) proposed the adoption of the annual report, and this having been seconded by Sir Berkeley Moynihan (President of the Royal College of Surgeons), was also carried unanimously. The report stated that the total receipts of the King's Fund for the year 1927 were £352,340 18*s.* 9*d.* Of this, £22,000 was from the estate of the late Mrs. John Wells, £1313 0*s.* 8*d.* from the estate of the late Mrs. Florence Mary Hames, £1000 from the estate of the late Mr. Samuel Lewis, £15,004 15*s.* 10*d.* from general legacies, £67,638 4*s.* 3*d.* from gifts to capital (including £60,000 from the estate of the late Earl of Iveagh), and £245,382 0*s.* 5*d.* from general receipts. These general receipts were made up as follows: Annual subscriptions, £23,432 15*s.* 2*d.*; donations, £20,789 16*s.*; League of Mercy, £17,000; British Charities Association, £15,000; dividends and nterest from investments, £168,959 9*s.* 3*d.*; and trustees of the Bawden Fund, £200. The amount of the ordinary distribution was £247,000, an increase of £2000 over 1926. The total sum distributed amongst hospitals, convalescent homes, and consumption sanatoriums during the last ten years, including all special distributions, is £3,360,688. Since the foundation of the Fund in 1897 a total net amount of £5,819,104 8*s.* 5*d.* has been distributed.

Grants under the Wells Legacies.

Sir Cooper Perry (chairman of the Distribution Committee) presented the final report on the Wells legacies distribution which contained the following list of grants made from Jan. 1st to May 15th:—

Acton Hospital: £1000 towards revised scheme of extension, increasing the number of beds from 50 to 60; £500 payable when the work is begun, and £500 to be the last £500 required to render the scheme free of debt.

British Hospital for Mothers and Babies: £500 towards second stage of new hospital; making, with £2000 granted in 1927, a total of £2500.

Central London Throat, Nose and Ear Hospital: £750 towards new out-patient department; on condition that a further £5000 is raised and the work begun by July 31st, 1928.

Charing Cross Hospital: £2000 towards reconstruction and equipment of the building acquired from the Royal Westminster Ophthalmic Hospital, increasing the beds by approximately 50; on the understanding that 6 additional beds, making 10 in all, will be reserved for accident cases.

Elizabeth Garrett Anderson Hospital: £500 towards extension; making, with £2000 granted in 1926, a total of £2500.

Forest Hospital: £250 towards extension, increasing the number of beds from 28 to 37; payable when the work is begun.

General Lying-in Hospital: £500 towards rebuilding of adjoining house as nurses' home and antenatal and postnatal departments; making, with £1000 granted in 1927, a total of £1500.

Guy's Hospital: £1000 towards provision of site for out-patient department extension.

Hampstead Hospital: £600 towards new operating theatre and casualty department and provision of 6 accident beds.

Hornsey Central Hospital: £500 towards new nurses' home; payable when the work is begun.

Hospital for Sick Children: £500 towards provision of isolation block for convalescent patients at the country branch at Tadworth, on the understanding that the block will ultimately be used as part of the provision for recovery patients.

King George Hospital: £10,000 towards the building fund of King George Hospital, subject to conditions to be agreed.

Mothers' Hospital of the Salvation Army: £1000 to extension, increasing the number of beds from 90 to 150, payable when the work is begun.

Prince of Wales Hospital: £3000 towards extension of out-patient department; £1500 payable when work is begun, and £1500 to be the last £1500 required to open the extension free of debt.

Princess Louise Kensington Hospital for Children: £500 towards second stage of new hospital; making, with £500 granted towards first stage in 1925, and £1000 towards second stage in 1927, a total of £2000.

Queen Charlotte's Maternity Hospital: £3000 towards first stage of extension scheme, increasing the number of beds; payable when a further £15,000 has been raised and the work begun.

Queen's Hospital for Children: £1000 towards extension, increasing the number of beds from 134 to 155, and providing additional nurses' accommodation; to be the last £1000 required to enable all three parts of the scheme to be opened free of debt.

Royal London Ophthalmic Hospital: £500 towards additional nurses' accommodation; making, with £500 granted in 1926, a total of £1000.

Royal National Orthopædic Hospital: £1500, of which £500 towards acquisition of adjoining site at country branch at Stanmore; and £1000 towards building of additional ward block at Stanmore, increasing the number of beds to 273; payable when the work is begun.

Royal Waterloo Hospital for Children and Women: £250 towards final stage of extension scheme; making, with £3000 granted in 1925, a total of £3250.

St. Mary's Hospital: £1000 towards extension; to be the last £1000 required to render the extension free of debt; making, with £4000 granted in 1926, a total of £5000.

South London Hospital for Women: £500 towards the provision of block containing new out-patient department and nurses' quarters; making, with £2000 granted in 1926, a total of £2500.

Westminster Hospital: £100 towards provision of accident ward, increasing the number of beds in the hospital from 234 to 242, of which 10 will be reserved for accident cases.

Woodford Jubilee Hospital: £300 towards extension, increasing the number of beds from 23 to 31; payable when the work is begun.

Reports were also presented on the work of the Propaganda Subcommittee by Lord Burnham; on the new edition of the Statistical Report by Mr. L. L. Cohen; and on the position of the inquiry by the Pay Beds Committee (to which reference was made in the Prince's opening speech) by the Earl of Donoughmore. During the absence of Lord Hambleden through illness, Sir John Rose Bradford is acting as vice-chairman of this committee.

A vote of thanks to his Royal Highness terminated the proceedings.

MEDICINE AND THE LAW.

Death Certification by Unregistered Doctor.

Charles Forbes, aged 77, pleaded guilty at the Old Bailey on May 18th to a charge of forging and uttering a death certificate. The certificate, as was stated a month earlier at Clerkenwell Police-court, related to one Mary Wagner and purported to be signed by Charles Forbes, M.B., Ch.B., a registered medical practitioner. A second charge in the police-court proceedings alleged that he had knowingly and unlawfully caused to be inserted in the register of deaths kept for the subdistrict of South St. Pancras a false entry relating to Mary Wagner's death. There was evidence that Forbes had been living for about seven years at a private hotel and, posing as a registered medical practitioner (though he had not put up a brass plate), had treated many poor people in the West Central district of London. For the defence it was stated that Forbes had duly qualified as a doctor at Glasgow after being a student at the

Middlesex Hospital, and that he had been struck off the Register about 30 years ago after a conviction for fraud. The Recorder remarked that he was of opinion that Forbes had never been a doctor at all; he was a danger to society. Sir Ernest Wild then passed sentence of nine months imprisonment without hard labour. It seems that the accused, in treating Mary Wagner, who was dying, had been obliged to pose to her nephew as a registered medical practitioner who could sign a death certificate. The unregistered practitioner must sooner or later be exposed to the risk of thus being led into a definitely illegal act, though the general public naturally takes little interest in the certification of qualifications or the fact of registration. As Forbes was not in fact registered, his previous career was not directly in issue; otherwise it would have been interesting to know whether he had in fact ever obtained any qualification.

Escape from Asylum.

For the offence of wilfully permitting, assisting, or conniving at the escape or attempted escape of a patient from an institution for lunatics, Section 323 of the Lunacy Act lays down a rather strangely limited punishment. The offender is to be "liable to a penalty not exceeding £20 nor less than £2." A man who was formerly a mental attendant at a St. Leonards home pleaded guilty at Hastings on May 18th to the charge of having aided and abetted the escape of Prince Ahmed Seif Ed Din, a certified lunatic, from Hastings in August, 1926. He brought his £20 to court and the full penalty was imposed, the chairman of the bench stating that it was a serious offence. The chief constable had observed that the maximum penalty was totally inadequate in a case of such a nature. When, if ever, our lunacy law receives its long-delayed amendment, perhaps Parliament will take note of this official opinion.

THE GERMAN SURGICAL CONGRESS.

(FROM OUR OWN CORRESPONDENT.)

Infective Origin of Malignant Tumours.

AT the recent Surgical Congress the first subject of discussion was the problem of malignant growths. Prof. Heidenhain (Worms) put forward the view that carcinoma, cancer, and sarcoma have the same origin and are conveyed from one person to another by an agent still unknown. The transference of human carcinoma to mice is, he said, impossible, as the human cells are destroyed in the foreign organism by autolysis. He has therefore endeavoured to preserve the virus without the cells and has produced autolysates by keeping cells of human cancer in a thermostat for 20 to 30 days. The products of this autolysis were inoculated into mice by subcutaneous, intracutaneous, intramuscular, or intraperitoneal injections or into the liver; sometimes also fresh tumour pulp was used for injection. The result was that a growth developed after several months. Inoculation of carcinoma often evoked sarcoma, and vice versa, whilst in other cases neoplasms of both categories were produced. The clinical features of the growth in the mice were similar to those of human cancer, and the primary tumour often appeared at a point distant from the place of injection. Metastases also occurred and autolysate made from a metastasis gave the same results on injection as autolysates from the primary growth. More than 2500 mice were inoculated and malignant disease developed in 6 per cent. of them. The success of the inoculation was seldom obvious before six months had elapsed, more often after 6–12 months, and generally after about a year. Primary growths developed in nearly every organ, but never in the skin and only once each in the stomach, the gall-bladder, and the colon. Prof. Heidenhain believes that his experiments have proved that carcinoma and sarcoma are caused by an agent outside the body; it has not yet been possible to ascertain its nature.

Treatment of Traumatic Meningitis.

Prof. Nicolai Guleke (Jena) said that 80 per cent. of cases of fracture of the base of skull prove fatal from meningitis. Nevertheless he recommended that operation should not be attempted unless symptoms of meningitis develop. Lumbar or sub-occipital puncture is indicated when the point of entry of the infection has not been ascertained. The improvement following puncture is due not to removal of the germs, but to reduction of the cerebral pressure. Puncture is not without danger, as it may cause a local meningitis to become general. If puncture proves insufficient, open drainage of the brain, combined with laminectomy of the second or third lumbar vertebra is indicated. The mortality in 325 cases in which operation was performed was only 19 per cent.

Operation for Pulmonary Embolism.

Prof. Gustaf Nyström (Upsala) reported three cases of pulmonary embolism treated by the Trendelenburg operation. One patient lived 30 hours, one five hours, and the third recovered. Prof. Nyström said that as it is sometimes difficult to remove the embolus, he had used an aspiration pump. Dr. A. W. Meyer[1] (Berlin) recommended digital compression instead of the compression tube. Good results were reported by Dr. Fernström (Stockholm), who had had two cures in four operations, and by Dr. Stegemann (Dortmund), who said that a patient operated on four years ago is still in good health.

Avertin.

Dr. Bernhard Martin (Berlin) described his method, using avertin as an anæsthetic. He advises that an enema should be given on the preceding day and an injection of scopolamine and of narcophine one and a half hours before operation. A lukewarm solution of avertin is then administered per rectum half an hour before operation, the dose being 0·125 to 0·5 g. per kg. of body-weight. The method was used for 259 patients, whose ages ranged from 1 to 59 years; the cases included 104 laparotomies and renal operations. The method proved unsuccessful in 4 per cent. of the cases, in which a small quantity of ether had to be given as an adjuvant to secure complete anæsthesia. Prof. Seefisch (Berlin) reported 8 per cent. of failures in 104 cases. He had observed circulatory troubles, the blood pressure sometimes falling 20 mm., but death had never occurred as a result of the anæsthetic. Dr. Keysser (Lichterfelde) drew attention to the excretion of avertin by the kidneys, which makes it desirable in his opinion to administer diuretin.

X Rays in Prostatic Enlargement.

Dr. Bolt (Königsberg) reported 58 cases of prostatic enlargement treated by X rays; 12 of them were in the first, 13 in the second, and 33 in the third stage of the disease. In nearly half of the cases normal function of the bladder was obtained without residuary urine. Twenty-four patients were re-examined after two and a half years, and all of them could pass urine spontaneously. The method, Dr. Bolt says, should always be used in the first stage of the disease, and in the second and third stages the results are no worse than those of operation.

[1] Two cases reported by Dr. Meyer were mentioned by our Berlin correspondent last summer (THE LANCET, 1927, ii., 350). —ED. L.

MILDMAY MISSION HOSPITAL.—The new wing of this hospital in Bethnal Green was opened on Saturday last by Lady Cooper. The extension includes a new operating theatre, X ray, massage, and electrical departments. The number of in-patients has doubled in the last five years and the accommodation has become quite inadequate. Seventy-five doctors and 120 nurses have gone from the hospital to undertake missionary work, and 350 women have been given a measure of practical training to fit them for tending the sick both at home and abroad. The chairman of the council paid a warm tribute to the work of Dr. Henry White, the medical superintendent, and of Miss Woodhouse, the matron.

GENERAL MEDICAL COUNCIL.

THE PRESIDENT'S ADDRESS.

THE summer session of the General Medical Council was opened on May 22nd, Sir DONALD MACALISTER presiding. He had to record the death of one member of the Council since the last session and the retirement from various causes of five others. Dr. J. A. Macdonald, of Taunton, who died on April 23rd, was a Direct Representative, whose energy and skill in practical affairs deserved high praise. This vacancy on the Council would be filled by an election to be held during the summer. Sir Arthur Chance and Dr. J. A. Adams had retired owing to ill-health and their places had been filled by Sir William Taylor and Colonel G. H. Edington, M.D., representing respectively the Royal College of Surgeons in Ireland and the Royal Faculty of Glasgow. Three members, Dr. T. W. Griffith, Dr. D. Hepburn, and Dr. R. Howden, had retired at the expiration of their terms of office and the universities represented by them—Leeds, Wales, and Durham—had appointed Prof. J. K. Jamieson, Prof. A. W. Sheen, and Sir Robert Bolam to take their places on the Council. Of former members of the Council Sir William Church, Sir Dyce Duckworth, and Dr. H. W. Langley Browne had passed away; the President recalled the worthy example they had set to their successors. The President proceeded to refer to the end of his term of office, pointing out that for more than half of its lifetime he had been privileged to take part in the Council's fellowship, and recalling that 24 years ago the Council had entrusted him, then one of its junior members, with the onerous task of upholding the dignity of the President's chair.

The British Pharmacopœia.

The President announced that the privilege of practising in this country afforded to the practitioners of Quebec had been revoked, the reciprocal privilege of practice within its territory hitherto accorded to the registered practitioners of the United Kingdom having been withdrawn. He described the new proposals relating to the issue of the British Pharmacopœia (see p.1086 of this issue of THE LANCET), and expressed agreement with the terms of the unanimous report of the subcommittee. He commended as worthy of adoption the proposals for the readjustment of the practice of the Council in this matter, and recorded with special satisfaction the first conclusion—"that it is not necessary or desirable to make any alterations in the existing law relating to the preparation or publication of the British Pharmacopœia." If that view was accepted, it would rest with the Council, without waiting for legislation, to take immediate action for such alterations in practice as might be found necessary or desirable in view of the current revision of the British Pharmacopœia, 1914. Members of the Council would all be deeply and gratefully sensible of the singular ability and wisdom of the Chairman, Mr. Macmillan, and of the eminent service which through him the Lord President had rendered to the Council and to British pharmacopœial science and practice.

India.

He continued: "By your instructions the important reports on medical education in India furnished by Sir Norman Walker and Colonel Needham, with the conclusions of the Executive Committee thereon, have been communicated to the Secretary of State for India, and through him to the Government of India, and to the Indian universities. We have been officially assured that in the course of this year the question of the central control of standards of medical qualification in India will be dealt with in connexion with the pending inquiry on Indian Government generally; and further, that proposals are now before the Central Legislature for the establishment of an All-India Medical Council, with which this Council will be able to discuss and settle questions of reciprocal recognition of professional qualifications more conveniently and more satisfactorily than is possible in present conditions.

"The University of Calcutta, which has meantime applied for the recognition of its degrees, has brought into early operation its new regulations, revised so as to bring them into better accordance with the statutory requirements for practice in this country, and desired that its final examinations held under the amended regulations should be inspected and reported on by an inspector approved by the Council. The Indian Government, notified of this application, has deputed Lieut.-Colonel J. W. D. Megaw, C.I.E., M.B., I.M.S., to perform this service, in the absence of Colonel Needham on leave. His appointment has been duly approved, and the Executive Committee will probably have to meet in July to receive his report and others relating to India."

Legal Decisions Affecting the Council.

The President referred to two recent decisions, in the Court of Appeal and in the High Court, directly affecting the Council. The first had reference to an application for exemption from income tax payments on dividends received from investments of surplus income by the General Council and its branch councils. The court had decided that, though the Council was concerned by statute with medical education and registration, its functions were not so exclusively "educational" as to make it legally a "charity" within the meaning of the law.

The second decision, obtained at the instance of the Dental Board, disposed finally of the objection sometimes raised to the Council's proceedings in cases of conviction in England or Ireland for "misdemeanour" under Section 29 of the Medical Act, 1858. It had been asserted by counsel for the defence that in that section "misdemeanour" must be read as if the words were "indictable misdemeanour." The objection had, under legal advice, been again and again overruled from the chair. That ruling was now sustained by the judgment of the High Court. The Act for ratifying the Agreement on Medical Registration made on behalf of Great Britain, Northern Ireland, and the Irish Free State, had been passed into law, and the Agreement was now in force. The Departmental Committee appointed to consider the Registration of Opticians Bill, before which Mr. Eason and the President gave evidence on behalf of the Council, had reported against the Bill, which would no doubt now be dropped.

Finance.

The President concluded: "The publication in February of the Medical Register and of the Students' Register shows that the annual numbers of registered practitioners and of registered medical students continues to fall steadily from those of the post-war inflation period. In 1927 1941 new practitioners were enrolled, as compared with an average number of 2167 for the preceding seven years. The number of medical students entered in the Register was 1214, as compared with the seven years' average of 1441 per annum. The decrease in both figures is likely to continue for two or three years, more particularly as regards practitioners, for the effects of the drop in the number of students, which took place in 1923 and 1924 under the influence of the new regulations, are not yet exhausted.

"Though the decrease in annual registration is reflected in our financial statement, I am glad to say that, owing to prudent anticipation on the part of the Finance Committee, it has been discounted in advance. Our surplus for the past year is less than it has been, but it still reaches the substantial amount of £3031; while the assets of the General and branch councils have been increased by £2557. Our financial position is, in fact, sound and satisfactory."

A vote of thanks to the President for his address was proposed by Prof. J. B. Leathes and seconded by Sir Norman Walker.

Sir Donald MacAlister vacated the chair. On the motion of Sir Norman Walker, seconded by Sir John Moore, he was re-elected President for a further term of five years.

The Council then passed to the consideration of penal cases.

THE HARVEY TERCENTENARY.

BANQUET AT THE GUILDHALL

THE celebration of the Harvey tercentenary came to a fitting close, as far as the London ceremonies were concerned, with a banquet given to the delegates, and to a group of highly distinguished guests, by the Royal College of Physicians of London. For this purpose the College, through the kindness of the City of London, was enabled to receive the company in the Guildhall, where on Wednesday, May 16th, 450 persons assembled to commemorate the publication of the "De Motu Cordis" in 1628.

Sir John Rose Bradford, President of the College, presided, and, after the loyal toasts, the large company drank in silence to the Memory of William Harvey.

The toast of the Delegates was then proposed by Mr. Neville Chamberlain, Minister of Health, who set before the company an incisive picture of what the placing by Harvey of physiology upon rational grounds had meant to public health administration all over the world. With reference to his own responsibilities he described briefly our organisation for the maintenance of public health, and indicated that every branch of all these activities could be said to be regulated by the desire to maintain among the people a healthy circulation. "Our preventive medicine," he said, "is based on Harvey; the enemies against which we war are the factors which upset the balance of man's physiology, and the success which we obtain in the contest is due fundamentally to Harvey's discovery." He concluded by referring to the international character of disease, which knew no frontiers, so that the resources of all nations should be pooled to set up a common defence. He coupled with the toast the names of Prof. A. Castiglioni, the delegate from Harvey's own University of Padua, and Prof. W. H. Welch.

Testimony from Padua.

Prof. Castiglioni, speaking at first in English with eloquence and fluency, drew an admirable picture of the glories of the University of Padua at the time when Harvey was acquiring there the fundamental anatomical knowledge upon which he later erected his wonderful discovery. At that time, he said, Galileo Galilei was doing for the circulation of the heavenly spheres what Harvey was later to do for the circulation of the blood, while the men working at Padua made of the university a veritable centre of the anatomical knowledge of the world. Then, pleading for the employment of the language of Dante in setting before the audience the connexion of Harvey with Padua, he gave a fine example of what an impassioned oration sounds like in the most sonorous language in the world. He spoke of Harvey's independence and courage and of the genius which enabled him to comprehend the inter-relations of his work with that of his predecessors and contemporaries, and said that he was proud to be the spokesman for his fellow delegates in testifying to the glory of Harvey. "Harvey," he said, "discussed his researches with his co-workers in Italian, and for his armorial motto adopted the Italian words 'più arde e più splende.' We note the characteristic virtues of the English in Harvey's loyalty and sense of honour. We applaud the man of science, while we remember the man of noble courage and character, always true to his colleagues, his science, and his king; well knowing, as he says in his book, that his discovery would make for him many enemies, nevertheless, he must publish it because the truth is for him a holy law. He was, and we of Padua can say it with pride, the worthy disciple of Galileo, who to the whole scientific world gave vision where they had been blind. I must also recall to your memory the ghosts of those great men who took the earliest steps in scientific research, Vesalius, Leonardo da Vinci, who with marvellous foresight contributed to the foundations of anatomy while ranging through the knowledge of the time, Realdo Colombo, Fallopius, Cesalpinus, the noble philosopher and teacher, and Fabricius Ab Acquapendente, who discovered the valves of the veins. In this great company Harvey stands in his right place, and we revere him as the prime discoverer of the physical and physiological significance of what he had learned and observed. In Harvey's days my language was used by the scientific men of the whole world; it was spoken at the Court of Charles I., the great patron of Italian art, and in France where Maria dei Medici was the Queen of Louis XIII. and it is fitting that in that language I should address you, though speaking for the Delegates of the academies and universities of all the world. I thank you for the opportunity which you have given us all to take part in this Celebration, and I record our admiration of your country."

Prof. Welch, whose studiously quiet delivery was in acute contrast to the fiery eloquence of Prof. Castiglioni, alluded happily to the fact that at the time when Harvey made his great discovery his country and Great Britain were one. He spoke in reference to the scientific proceedings with the highest admiration of the demonstrations at University College, declaring that such remarkable reproduction of Harvey's researches must have come as a revelation to all who saw them and would remain as an inspiration to them.

The Order of Honorary Fellows.

In giving the next toast, the Honorary Fellows, Sir John Rose Bradford remarked that the institution of this order was a departure; in a sense, he said, the Marquis of Dorchester, who, after the destruction of the College library in the Great Fire, bequeathed his magnificent collection of books to the College, might be regarded as an honorary Fellow, for he was a layman, while the late King Edward VII. had also accepted from the College a Fellowship. But the institution of an order of honorary Fellows was an innovation. In accordance with their decision to create this order the College, he said, had decided to ask the Earl of Balfour, Sir Ernest Rutherford, Prof. I. P. Pavlov, of Leningrad, and Prof. K. F. Wenckebach, of Vienna, to accept the highest honour which it was within the power of the College to confer. He briefly justified the fitness of the choice. The learning and wisdom of Lord Balfour, he said, needed no dissertation from him, his deep interest in science and his many services rendered to science being well known to all. In Sir Ernest Rutherford, the President of the Royal Society, the College were honouring not only a great philosopher, but the figurehead of a great association; Prof. Pavlov, of Leningrad, would be recognised by the world as the doyen of physiology, while Prof. Wenckebach, of Vienna, had won universal fame by his studies along lines similar to those which the great Harvey had laid down. Replies were made by Prof. Wenckebach and Sir Ernest Rutherford, the latter of whom explained how Harvey had come to visualise the correct physical forces that must be concerned in the circulatory system, saying that he was the first man to apply physics to medicine.

Harvey and Linacre.

The health of the President was proposed in eloquent and humorous terms by the Archbishop of York, who said: "I have one link with this College which I greatly value—it is that its principal founder and first President, Thomas Linacre, became 400 years ago, what I still am—a Fellow of All Souls College, Oxford; and as the founder of the College shared with me the fellowship of that delightful home, I may claim to stand towards the College in the position of Founder's Kin. I venture to dwell for a moment on the claim of Thomas Linacre to special honour, even on an occasion specially commemorating William Harvey. Linacre represent

ıe union of medical science with literature and holarship; he was one of the first students of reek, a pupil of Grocyn and friend of Erasmus, olet, and Thomas More—that band of scholars ho might have changed the course of history if ıly men were willing to be guided by 'sweetness ıd light.' I hope that this union may always ntinue—Harvey himself was a considerable scholar -and that in spite of the claims of highly specialised udy, the goodly succession of 'medical humanists' ay still be maintained. Again, Linacre represented e union of medical science and the Church. He was mself, for the last 15 years of his life, in Holy Orders. o doubt this union was for a time somewhat pressive to medical science. Theology—the queen sciences—has been sometimes, like other queens, alous and somewhat despotic. Her control of edicine lasted long. Only seven years before the oyal College of Physicians obtained its charter, statute was passed requiring all those who had not aduated in medicine at Oxford and Cambridge, d who desired to practise medicine in London, be approved after examination by the Bishop of ndon or the Dean of St. Paul's. How interesting would be if that requirement was still in force! ıere would then be two schools of London physicians those who had graduated in the cheerful optimism the Bishop of London, and those who had graduated the philosophic pessimism of the Dean of St. ul's, or even in that sombre study of eugenics, ıich creates in some of us the uncomfortable feeling at it might have been better if we had never been rn! Now, however, medical science has been set e to go upon its own way unhindered, and the ationship of medicine in the Church may be, and ght to be, one of cordial coöperation. For each eds the other in its own work. Medicine will ıch the Church that the life of mind or even spirit fulfilled through and conditioned by the body; e Church may remind medicine that the body penetrated, influenced, and controlled by the spirit. ır common ground is that the body, mind, and rit are not mere separate departments of man's ture, but parts of one whole organism which must studied as a whole. In this study the Church d medical science should work together in the spirit students, with open minds as befits the disciples truth. As I propose this toast, what moves me the thought of the constant patient research which es on under the encouragement of the College, and immediate application to human needs. I don't nk there is any profession in which research, ching, and practice are so close or more truly ed in one great enthusiasm of service. We have been thinking of William Harvey pursuing his at researches in the very wards of St. Bartholo- w's; and I like to think that there may be men w in the wards of our great hospitals impelled by ger quest of knowledge and by an equally eager sire to lift the burden of human suffering, and who y be on the brink of some new discovery; that, use the words of Milton, 'there are some worthies w breathing in the air of England who shall be e Harvey] her leaders to such a deliverance as ll never be forgotten by any revolution of time t this world hath to finish.' Of all this great nistry of research and healing the Royal College the heart. Is it fanciful to-night to speak of its n action as resembling that which William Harvey covered? In that heart all the results of research, ich is the very life-blood of science, are tested; nce they are communicated through all the veins l arteries of a devoted profession to the whole mmunity; and a return is made to the heart in admiration and gratitude of the people. In ler that we here, their grateful guests, may take share in that admiration and gratitude, I ask to honour the toast of 'The Royal College of ysicians,' and I couple with it the name of one o has signally illustrated the union of research l practice—the distinguished President."

Sir John Rose Bradford briefly replied.

A Distinguished Company.

The distinguished company present included, in addition to the delegates and the speakers already mentioned, Their Excellencies the French, the German, the Italian, the Belgian, the Austrian, the Greek, and the Finnish Ambassadors and Ministers, the Archbishop of Wales, Cardinal Bourne, the Deans of Westminster and St. Paul's, the Chief Rabbi, the Lord High Chancellor, the High Commissioner for New Zealand, the President of the Royal College of Surgeons of England, the President of the Royal Academy, the President of the Society of Antiquaries, the Recorder of the City of London, the Vice-Chancellor of the University of London, and the Regius Professors of Medicine at Oxford and Cambridge. The following acted as Vice-Chairmen: Dr. Raymond Crawfurd, Registrar; Dr. R. O. Moon, Assistant Registrar; Dr. Sidney Phillips, Treasurer; Dr. Arnold Chaplin, Harveian Librarian of the College; Dr. J. W. Carr, Dr. F. J. Poynton, and Dr. A. P. Beddard, Censors of the College; Dr. H. Morley Fletcher, Sir Hector Mackenzie, Sir StClair Thomson, Dr. J. H. Abram; and Mr. H. M. Barlow, Secretary of the College.

THE VISIT TO OXFORD.

A number of the delegates to the celebration of the Harvey tercentenary visited Oxford on May 17th and were entertained at luncheon in Harvey's College by the Warden and Fellows of Merton. In the morning the Regius Professor of Medicine, Sir Farquhar Buzzard, the Dean of the Faculty, Dr. Ainley Walker, and a number of other members of the University conducted the visitors in groups to different centres of particular interest, and at 1.15 the different parties re-united at Merton College, where they were met by the professors in the Faculty of Medicine and were received by the Warden and Fellows of the College. Luncheon was served in the College Hall to about 100 guests, and in the centre of the hall were displayed some of the College books relating to the period of Harvey's wardenship, and a bursarial account showing his signature was exhibited. The Warden, Mr. Thomas Bowman, expressed the pleasure felt by the College in welcoming and entertaining the delegates, and a brief address followed from Sir John Rose Bradford. A short account of Harvey's connexion with Merton, drawn up by Prof. H. W. Garrod, Fellow of the College, was presented to each of the guests at luncheon.

THE VISIT TO CAMBRIDGE.

On May 18th the delegates proceeded to Cambridge, a certain number of them making the journey by car in order to visit the burial place of Harvey at Hempstead in Essex. On arrival at Cambridge they were entertained at luncheon by the Master of Gonville and Caius, Sir Hugh Anderson, and the Fellows of the College from which Harvey graduated. A brief address and welcome to the guests was given by the Master, to which Sir John Rose Bradford replied. The visitors were then taken, as on the previous day at Oxford, to various important university institutions.

HOSPITALS AND MOTOR ACCIDENTS.—It appears from a letter contributed to the *Times* of May 18th by Sir Arthur Stanley, as President of the British Hospitals Association, that insurance companies are now prepared to pay the cost of hospital treatment of insured persons upon receiving from the hospital a statement of the expense incurred.—A remarkable example of the seriousness of the situation created by the great increase in the number of motor accidents is furnished by last year's experience of Chiswick Hospital, an institution of 42 beds, which was established and is entirely maintained by a private benefactor. During 1927 2431 casualty cases were treated. The number is explained by the fact that the Chiswick High Road is one of the most crowded exits from London and the principal avenue of access to the Great West Road. Almost the whole of these accidents occurred in that thoroughfare, but they do not represent the entire number, since many others were treated at the West London Hospital at Hammersmith.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some 1927 statistics of five districts of varying local government status:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Plymouth C.B. (211,650)	16·5	12·0	1·00	1·58	2·6	1·4	61/32	4·6	7·7
Southport C.B. (78,670)	12·2	13·6	0·61	1·82	2·9	2·0	48/20	3·1	4·2
Swindon B. (57,150)	14·5	11·2	0·96	1·26	2·3	2·3	47/25	2·4	1·2
Barnstaple R.D. (18,950)	14·4	13·3	1·0	1·1	2·6	1·7	65/–	7·3	0·0
Ventnor U.D. (5,015)	11·8	15·3	0·6	1·0	3·2	3·4	17/–	0·0	0·0

Plymouth.

Dr. A. T. Nankivell describes 1927 as a year of much progress. Health education work has been enormously increased. A monthly health magazine with a circulation of 10,000 has been distributed at a slight profit. It is realised that this is a pioneer effort and that it has to be made more attractive in order to get at the people who most need instruction. Health propaganda films are generally too scientific, says Dr. Nankivell, and need to be humanised and made more entertaining. Some 450 lantern slides were exhibited 16,470 times in Plymouth cinemas and theatres. Advertisements appear in the trams and stations. A Runsyne machine with an illuminated health message has been fixed at one tram terminus. The local press helps. In fact, nobody in Plymouth needs to be ignorant of the primary laws of health. Swilly Hospital has been made into an ideal place for late cases of pulmonary tuberculosis in women. Additional outside accommodation has been found for pulmonary and non-pulmonary tuberculosis. Photographs are given of a new children's ward and a school hut at Didsworthy. An X ray apparatus is needed to enable artificial pneumothorax treatment to be carried out.

The maternity and child welfare work increases. There were 3502 births and 981 new cases attended the six antenatal clinics. Over 400 children between 6 months and 5 years of age have been immunised against diphtheria at the special clinic opened in January. The new cases treated at the ultra-violet light clinic numbered 130, mostly rickets, but including 16 cases of malnutrition and 9 of skin diseases. The results were claimed to be "very encouraging." Medical practitioners have coöperated in the investigation of the causes of puerperal pyrexia. At the antenatal clinics about 22·5 per cent. of the patients were found to have some discharge, but among the 41 (excluding the mild) cases of pyrexia investigated, auto-infection from a pre-existing discharge was not demonstrated and the influence of poor surroundings did not appear to be marked. In one case the home was dirty and two cases were nursed by untrained women with "elementary ideas of asepsis." In one case there was a suspicion of transmission of infection from a previous case. Three cases occurred simultaneously in a nursing home. Altogether 23 cases occurred in institutions "where the conditions would certainly be more favourable than the usual home surroundings." The staff of health visitors is inadequate for the work and two more "centres" are needed.

Good work is being done in house renovation under Section 3 of the 1925 Act, by which, in the default of the owner, the town council does the work and makes the cost a first charge on the property. It is estimated that £100,000 has been spent during the last three years in repairing insanitary houses. Two years ago three insanitary areas were scheduled, but little progress has been made. Plans have, however, been prepared for the reconditioning of two areas of "squalid streets." The supervision of the milk supply has been strengthened by visits of the inspector to the farms during the early morning milking. One of the largest dairies has installed a modern pasteurising plant and another sells sterilised milk. There is a marked increase in the sale of "designated" milks. The municipal hospitals and "centres" use Certified milk. Among 134 milk samples examined for tubercle none was found to be infected. The searching out of congenital syphilitics continues. Out of 4000 school-children examined, 86 were found to be affected. Altogether 118 children came under treatment during the year. Keratitis is the chief trouble. Many when first brought to the clinic cannot see, but improve so much under continuous efficient treatment that in time they are able to read and lead a practically normal life. A "rheumatic register" started at the beginning of the year includes the names of 56 school-children, some apparently in good health, some with chorea, and some with the heart affected. Better hospital arrangements are needed for the children attending the orthopædic clinic.

Oysters from the Tamar and St. Germans beds have to be relaid at the mouth of the Yealm for purification, and the attempt was made during the year to use the Yealm beds for breeding and rearing. The catch from the first-named beds shows a decline which has been attributed both to overfishing and contamination by oil. Complaints of the pollution of the Sound by oil, acid, and sewage have been investigated. It is suggested that the Admiralty should prohibit the discharge of oily matters within the 3-mile limit. On the other hand, it is thought that much of the oil may originate with the waste-oil of the 12,000 motor vehicles of the borough discharged into the Sound via the sewers. Investigation of the currents and winds seems to indicate that the bathing pools are adequately protected from the western but not from the eastern sewage outfalls.

The report for the Port contains a welcome reference to the conspicuous improvement in the crew quarters of newly built vessels as regards position and construction of living space, bathrooms, and room set apart for meals. At the same time it is pointed out that the rat-proofing of cabins, crews' spaces, and store rooms should be made compulsory in all newly constructed vessels. Energetic efforts were devoted to rat destruction. A new rat-proof warehouse is cited as a model for imitation. Rats infected with plague, as a sequel to human plague in the Argentine, were found on grain ships from Rosario in the port of London. The examination of 122 black and brown rats caught on three grain ships leaving Rosario while plague was prevalent in that neighbourhood gave a negative result in the case of Plymouth.

Southport.

Dr. G. C. Barnes reports that the new isolation hospital was opened in October by Sir G. Newman, who declared that he knew of no existing hospital better adapted and designed for the work contemplated, a verdict which is supported by excellent photographs of the buildings and equipment, including the sanatorium wards for tuberculosis. The X ray block and laboratory is to be completed this year. Since the first sunshine recorder was erected at Southport 36 years ago, there have only been three more sunless years than 1927. The recorded hours were 1382·4, or 148·5 hours below the normal. During the early months an epidemic of severe influenza accounted for 56 deaths. Towards the end

f the year an artificial sunlight installation was rovided for the tuberculosis, school, and child elfare departments.

Swindon.

Dr. Dunstan Brewer describes how Swindon was uddenly visited by an epidemic of influenza about an. 15th, which reached its peak on the 24th and ollapsed on Feb. 15th, leaving nothing behind it. The apid increase of pneumonia notifications in the second eek of January heralded the epidemic which attacked bout a third of the inhabitants. The 56 deaths ttributed to it included those of 17 persons over 0 and 5 non-residents. The deaths were due in nearly qual proportions to toxic and pneumonic forms. n June a mild type of epidemic pneumonia appeared. n mid-August 5 cases of pneumonia were admitted to ospital, 2 from the borough and 3 from outside, all f which proved fatal. The mother of one case died rom paratyphoid and the brother-in-law of another eveloped cerebro-spinal meningitis and recovered. His wife, who was a carrier of the meningococcus, ad visited her brother, the only one of this batch of atal pneumonias who did not have cerebral disturbnce. Dr. Brewer regards the prompt notification of neumonias as of prime importance in cold climates as hey are generally the first evidence of approaching pidemic trouble. If a medical officer of health can ely upon his register of pneumonia notifications he ill not be caught unawares by epidemics of a angerous or unusual character. In Swindon neumonia has the first indisputable claim upon the ccommodation of the isolation hospital. During 927, 63 cases were removed to hospital, of whom 4 died (22·2 per cent.), while 139 were treated at ome, of whom 44 died (31·6 per cent.). As pneumonia n England and Wales causes five times as many deaths s all other epidemic diseases put together and is in ost infections the chief danger to life, the Ministry oes well, says Dr. Brewer, to urge that it should ccupy a first place in the attention of sanitary uthorities. A table shows that during the last even years there have been 1013 notifications of neumonia in Swindon with 323 deaths, and that the ase-fatality was 19·02 per cent. for hospital-treated nd 34·7 per cent. for home-treated cases respectively. As in former years all the deaths of children under 7 years of age were investigated and correlated with ie known facts of their medical history with a view to ie ascertainment of the main factor responsible for using death. There were 65 deaths under 17 ears, as compared with 94 and 103 in the two preceding ears. There were 830 births during 1927 and 338 ew cases attended the antenatal clinic. There is a reat need of hospital beds for in-patient antenatal eatment. When the proposed extension of the ictoria Hospital has been carried out and the ew maternity hospital has been completed (hoped r in 1929), Dr. Brewer thinks the town will be asonably equipped except for mental and tuberculosis ses.

During 1927, 289 (including 4 municipal) houses were ected within the borough and 100 on the outside rporation estate. As the population declined by 0, overcrowding has been theoretically relieved to e extent of 1300 persons. The small amount of rious overcrowding which actually exists in vindon can only be actually relieved by the erection the cheapest possible houses, let at an uneconomic nt.

Barnstaple.

Dr. J. R. Harper's rural district, which covers 0,000 acres, is mostly agricultural but has a fishing dustry and is a holiday health resort. He says the andard of living has considerably improved in cent years, but that much remains to be done in the placement of picturesque but badly lighted and -ventilated cottages. There were no notifications of erperal pyrexia and only one of typhoid fever, a vere case at a dairy farm, the origin of which uld not be traced but which led to no other cases. widespread epidemic of influenza is reported, deaths being registered from it and 12 from pneumonia. Practically all the schools were closed for two to three weeks during February and March from this cause. No serious complaints about the water-supply were received, except from Combe Martin. During the year 33 new wells were sunk.

Ventnor.

Dr. Reginald T. Cooke mentions that three-quarters of the 77 deaths in this urban district were those of persons over 65 years of age. There were 57 births and one infant death. Scarlet fever was unusually prevalent and caused 1 death ; 7 deaths were ascribed to influenza. The water-supply, from the chalk, is "intermittent" to the higher levels of the town, and Dr. Cooke thinks that tenants frequently do not exercise sufficient care in having their storage tanks periodically cleansed. The hours of bright sunshine registered at the Ventnor Hospital were 1771·6 and at Ventnor Park 1672·1. These are compared to Brighton with 1666·2 hours. Ventnor held a good position among 12 towns, which keep records of ultra-violet rays. For 3 months it was first, for 2 months second, and for 3 months third.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 12TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week :—Small-pox, 319 (last week 321) ; scarlet fever, 1609 ; diphtheria, 1110 ; enteric fever, 55 ; pneumonia, 1267 ; puerperal fever, 32 ; puerperal pyrexia, 91 ; cerebro-spinal fever, 11 ; acute poliomyelitis, 7 ; acute polio-encephalitis, 1 ; encephalitis lethargica, 21 ; continued fever, 1 ; dysentery, 9 ; ophthalmia neonatorum, 137. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 25 counties : London, 5 ; Bedford, 6 ; Berks, 1 ; Buckingham, 1 ; Derby, 5 ; Durham, 55 ; Essex, 1 ; Gloucester, 5 ; Hertford, 3 ; Lancaster, 22 ; Leicester, 2 ; Lincoln, parts of Holland, 2 ; parts of Lindsey, 5 ; Northumberland, 7 ; Nottingham, 11 ; Soke of Peterborough, 1 ; Salop, 1 ; Stafford, 20 ; Surrey, 1 ; Warwick, 9 ; Yorks, North Riding, 15 ; West Riding, 87 ; City of York, 3 ; Glamorgan, 16 ; Monmouth, 35.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 15th–16th was as follows : Small-pox, 35 ; scarlet fever, 1597 ; diphtheria, 2163 ; enteric fever, 34 ; measles, 1160 ; whooping-cough, 148 ; puerperal fever, 19 (plus 15 babies) ; encephalitis lethargica, 66 ; "other diseases," 24. At St. Margaret's Hospital there were 17 cases of marasmus, and 10 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were 2 (0) deaths from small-pox, 3 (0) from enteric fever, 71 (37) from measles, 4 (1) from scarlet fever, 44 (10) from whooping-cough, 39 (14) from diphtheria, 44 (10) from diarrhœa and enteritis under two years, and 80 (10) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Bristol, West Bromwich, and Salford. Of the 34 fatal cases of measles outside London 7 were reported from Liverpool and 3 from Sheffield ; while the figures in Edinburgh, Glasgow, and Dublin for the same week were 5, 7, and 6. Of the 34 fatal cases of whooping-cough outside London 10 were reported from Birmingham and 4 from Liverpool. The two deaths provisionally classified to small-pox were assigned to Bradford and Middlesbrough.

Dr. C. V. Dingle, medical officer of health for Middlesbrough, informs us that the man who died there was 77 years of age and had long been an inmate of the Union Infirmary. There had been some cases of small-pox in the institution and he developed the disease and died one day after the rash appeared. He was in a septic condition and very feeble before he contracted small-pox. He was too ill at the time of the outbreak to revaccinate and his vaccination in infancy was indefinite. He said he had been vaccinated, but no visible marks could be made out.

The number of stillbirths registered during the week was 314 in the great towns, including 57 in London.

Correspondence.

"Audi alteram partem."

ENCEPHALO-MYELITIS FOLLOWING VACCINATION.

To the Editor of THE LANCET.

SIR,—In an account of Encephalo-myelitis following Vaccination, published in the *British Journal of Experimental Pathology* in 1926 (vol. vii., pp. 181–222), which you made the subject of a leading article on Sept. 4th, 1926, we pointed out (p. 186) that —

"the most characteristic feature of the inflammation is the occurrence in the white matter of a broad perivascular zone of softening in which infiltration is relatively slight (Figs. 4, 6, 7)";

and again in a summary of "the chief *characteristics of the inflammation*" (p. 190):—

"The most characteristic histological feature is the zone of perivascular softening in the white matter."

Further, in a histological comparison with poliomyelitis we said (p. 200):—

"the cardinal differential feature by which the conditions can be separated at a glance is the occurrence in post-vaccinial encephalo-myelitis of perivascular zones of softening of white matter";

and in a similar comparison with over 40 cases of encephalitis lethargica we said (p. 204):—

"Finally, we have not found in any case the perivascular zones of softening that are so conspicuous in the white matter of post-vaccinial encephalitis";

and again, on the same page,

"The most striking differential feature of the post-vaccinial cases is the zone of softening round vessels in the white matter."

In the "conclusions" (p. 219) in the comparison of post-vaccinial encephalitis with poliomyelitis it is said:—

"A conspicuous peculiarity is the presence of broad zones of softening round vessels in the white matter";

and in the comparison with encephalitis lethargica:—

"here again the zones of perivascular softening are a conspicuous peculiarity."

The softening is described as follows (p. 186):—

"This softening was demonstrated by the Weigert-Pal method in only one portion of tissue from Case 5, but the loss of medullated sheaths is conspicuous in sections stained deeply with hæmatoxylin, particularly Weigert's iron-hæmatoxylin. The loss of the rings corresponding to the medullary sheaths is usually associated with a spongy vacuolation of the glial net; the cytoplasm of the infiltrating cells tends to be vacuolated and occasionally is typically foam-like."

This description follows immediately upon the reference to Figs. 4, 6, 7, in illustration of our perivascular softening, and the completeness of the destruction of medullated sheaths is very clearly shown in the drawing (Fig. 7) of the highest magnification. We considered the three changes described to represent a rapid, massive destruction of medullated sheaths, some absorption of water and the presence of fat granule cells: phenomena characteristic of softening of the central nervous system when not complicated by colliquative necrosis of the supporting tissues. The employment of the term "softening" thus emphasised the apparent rapidity and uniformity of the destruction of myelin in comparison with that in the so-called primary tract degenerations. A reference on page 204 to two cases of acute disseminated sclerosis gives further evidence that loss of myelin was the essential feature of our perivascular softening.

Dr. J. R. Perdrau in a paper on the Histology of Post-vaccinial Encephalitis, contributed to the *Journal of Pathology and Bacteriology* (1928, vol. xxxi., pp. 17 to 32), found that —

"perivascular demyelination is the essential and characteristic lesion of post-vaccinial encephalitis" (p. 28).

By special stains he confirmed (p. 20) our conclusion that the destruction of myelin was exceptionally rapid. No evidence of perivascular demyelination could be found in five cases of encephalitis lethargica studied by either the Weigert-Pal or the Marchi method or by both. Perivascular demyelination was not observed in pieces of spinal cord from poliomyelitis, but the material examined was considered inadequate for a satisfactory comparison. Whilst making numerous references to our work he only mentions our observation of the destruction of myelin in a footnote (p. 18), and says we laid little stress upon the observation. The footnote reads:—

"The term 'softening' is here used in its ordinary sense of necrosis when applied to certain lesions of the central nervous system (e.g. the result of arterial thrombosis). Turnbull and McIntosh use it for an earlier stage of the process, described here as demyelination. They associated this 'softening' with 'loss of the myelin sheath' (p. 186) but laid little stress on the observation."

In Case 7 we found "a zone of softening and infiltration along each edge of the anterior septum" (p. 190); Dr. Perdrau (p. 20) refers only to our having recorded infiltration of this site. We drew throughout the paper a sharp distinction between perivascular softening and perivascular infiltration alone. Thus (p. 186):—

"Within the substance of the brain and cord infiltration is conspicuous and is essentially perivascular. Infiltrations within the adventitial sheaths or immediately round the sheaths of the vessels, forming sharply-defined vascular sleeves, are numerous. . . . The predominating lesion is a broad zone of less dense, 'extra-adventitial,' perivascular infiltration (Fig. 1). In portions of the grey matter in which this infiltration is at its maximum the perivascular distribution is less distinct, the infiltration becoming diffuse (Fig. 3). Such zones of extra-adventitial perivascular infiltration occur in the white matter (Fig. 2), but the most characteristic feature of the inflammation is the occurrence in the white matter of a broad perivascular zone of softening in which infiltration is relatively slight (Figs. 4, 6, 7)."

Then follows the description of softening which has already been quoted. Perivascular infiltration was not described as peculiar to post-vaccinial encephalitis. In the description of poliomyelitis perivascular infiltration is not denied; it is only said (p. 200):—

"The perivascular nature of the extra-adventitial infiltrations is not conspicuous."

In the description of encephalitis lethargica (p. 203):—

"In the formation of vascular sleeves, especially in initial stages, cells immediately outside the adventitia take considerable share here as in post-vaccinial encephalitis. The disposition of the cells of the extra-adventitial infiltrations within the grey matter is very similar: a perivascular arrangement is usually distinct, . . . in one case glial cells with elongated oval nuclei are abundant round vessels in the grey matter so as to recall the perivascular infiltration without softening occasionally seen in the white matter in post-vaccinial encephalitis."

Dr. Perdrau, however, talks (p. 25) of "the extra-adventitial infiltration which Turnbull and McIntosh look upon as characteristic of post-vaccinial encephalitis," and in his summary (p. 31) says that post-vaccinial encephalitis is characterised by "demyelination (the extra-adventitial infiltration or softening of Turnbull and McIntosh)."

From careful perusal of Dr. Perdrau's paper, especially the second paragraph of page 23, we believe that this second discrepancy may be due to Dr. Perdrau possibly having found by the methods of Weigert-Pal and Marchi loss of myelin in our "broad zone of less dense, 'extra-adventitial,' perivascular infiltration" (p. 186), as well as in our zones of "softening." If that is so, it has not been clearly stated. We find it necessary to draw attention to both discrepancies, because Dr. Perdrau's paper has to our knowledge caused many to believe that we had failed to recognise that perivascular demyelination was a characteristic of post-vaccinial encephalitis and the cardinal feature differentiating that condition from poliomyelitis and encephalitis lethargica. Yet in reality it was the recognition in 1912 of the

perivascular destruction of myelin which first drew our attention to post-vaccinial encephalitis, and it was this perivascular destruction of myelin on which we laid such stress in a report in January, 1924, on the histology to the first commission appointed by the Ministry of Health, in a demonstration to the commission in the following month, which included the actual fields from which our figures 7 and 8 were drawn, and in our publication of 1926 referred to above.

We are, Sir, yours faithfully,

HUBERT M. TURNBULL.
JAMES MCINTOSH.

Bernhard Baron Institute of Pathology, London Hospital, E., May 16th, 1928.

LEGAL AID SOCIETIES AND THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—The case decided in the King's Bench Division recently in which damages were awarded against a solicitor for maintenance and champerty—proceedings by which a person bargains to carry on a suit in which he has no legitimate concern in consideration of the damages which might be recovered in the suit—is of interest to the medical profession. Legal aid societies are more or less exclusively engaged in claims for personal damages. They get their information as to accidents from different sources. To make a claim they require a solicitor and doctor who are willing to work on a speculative basis. The poor person would appear to have little or no other alternative but to seek their aid when claiming damages to which they might be entitled. As a result of this case, and having regard to the medical aspects involved, will not the General Medical Council take action? Apart altogether from any question of liability, the first member of the "syndicate" to receive actual cash out of one of these cases is the doctor acting on behalf of the solicitor who gets a fee from the other side for a consultation. It is in this direction that I would suggest a very necessary and equitable reform in the present state of affairs. In my opinion, in cases of this kind, "running down," "third party," &c., no such consultation fees should be paid till liability is admitted or established. Medical fees and expenses could then be included in the costs of the case whether it was settled in or out of court.

I am, Sir, yours faithfully,

J. J. SCANLAN.

Old Broad-street, E.C., May 13th, 1928.

EPIDEMIC CATARRHAL JAUNDICE.

To the Editor of THE LANCET.

SIR,—Although engaged in other problems now, I read with much interest Dr. Athole Ross's note on the pathology of epidemic catarrhal jaundice in your issue of March 24th (p. 599). May I first remark that Dr George Buchanan will probably take exception to an observation therein erroneously attributed to him, and quoted from the Ministry of Health Report No. 42, in which certain views of the present writer are cited.

My main object, however, in writing is to explain that my translation to South Africa in 1926 was responsible for not fulfilling an implied promise in a statement mentioned by Dr. Ross, "that fresh material is being investigated with a view to discovering bacterial infection." I had become convinced by that time, both from clinical and bacteriological experience of the small outbreaks of jaundice amongst school-children I had carefully investigated, that none conformed from the aspect of clinical findings, incubation period, bacteriological and experimental results to that of spirochætal jaundice. Apart from the report of a small epidemic of spirochætal jaundice by D. M. Pyon and myself, published [1] in 1925, where cognisance was taken of both incubation and invasion periods to strengthen the diagnosis, few if any other epidemics of mild jaundice in Britain have been definitely proved to be of spirochætal origin. The presence of spirochætes in the urine of young subjects with mild jaundice is in my opinion a mere trap for the unwary, which only experience teaches one to avoid. Hence in outbreaks of jaundice amongst school-children or in families, where case-to-case infection rapidly occurs, spirochætal jaundice can be ruled out, which opinion has also been expressed by such authorities as Stokes and Ryle. I would further add to this—in spite of the presence of spirochætes obviously not leptospiræ in the urine, as the latter are so distinctive whether alive, degenerated, or dead.

In conclusion I would like to mention that the future line of investigation I had in mind in 1926 was to attack the problem of epidemic catarrhal jaundice from the point of view of a descending infection, possibly from the naso-pharynx, as a number of my cases exhibited initial catarrhal symptoms. So to the suggestion made by Dr. Ross regarding complete bacteriological examination of the excreta, I should like to add that naso-pharyngeal swabs be examined at the onset, and most important of all the application of bile drainage, which I had chiefly in view, for the purpose of a bacteriological examination of both duodenal contents and bile. This, however, I realised would present no little difficulty in such young subjects, but it may be practicable in older school-children.

I am, Sir, yours faithfully,

GEORGE BUCHANAN, M.D., D.P.H.,
Superintendent, Routine Division, South African
April 25th, 1928. Institute for Medical Research.

[1] THE LANCET, 1925, i., 504.

INDICATIONS FOR TONSILLECTOMY.

To the Editor of THE LANCET.

SIR,—In your issue of May 12th Dr. C. J. McSweeney writes: "To say what is or is not an healthy tonsil is a very much more difficult task than to record whether or not the tonsil is of normal size," and further, "If enlargement is to be taken as the expression of past infection, it is clear that the Cardiff figures do not support the conclusion of the B.M.A. Subcommittee." As I believe mere enlargement is not to be taken as the expression of past infection, I suggest the following indications for tonsillectomy.

I have followed the results of Crowe's[1] work, which I present here, in deciding whether tonsils are diseased or not. There is normally a hyperplasia of the tonsils and adenoids between the ages of 3 and 12 years. Tonsils and adenoids are physiological important parts of the mechanism that protects the lower air passages from dust and organisms. An enlarged tonsil ought not to be considered diseased unless the tonsillar lymphatic gland[2] is enlarged or the patient has had an attack of tonsillitis or a peritonsillar abcess, or the anterior pillars are adherent to the tonsils, or pus can be squeezed from the tonsils by making pressure on the anterior faucial pillar, or the tonsil has been partially removed or cauterised, causing occlusion of the crypts. Tonsils that have been damaged by previous infections or partial operative procedures are prone to give rise to general disorders following an acute attack of chronic tonsillitis. If a child has a focal infection and has had one attack of acute follicular tonsillitis, I would remove the tonsils, as the absence of signs would not exclude the presence of a small chronic intra-tonsillar abscess. Thus, even in the presence of a focal infection, I would not remove large tonsils unless one of the above signs demonstrating infection was present.

The tonsils most prone to cause focal infection are, I believe, the small fibrous tonsils, from which pus can be expressed or which are adherent to the faucial pillars. In children I chiefly rely on the enlargement of the tonsillar cervical gland as the sign of tonsillar infection. This gland is palpated just above the hyoid at the anterior border of the sterno-mastoid, if the examiner stands behind the patient. Another

[1] Crowe, S. J., Watkins, S. S., Rothholy, A. S.: Bull. Johns Hopkins Hospital, 1917.
[2] Cervical Lymph Nodes, Ann. Surgery, 1905, xlii., 49–74.

sign of chronic tonsillitis, to which Pavey-Smith[3] has called attention, is redness limited to the tonsil and its immediate surroundings, and especially a vertical red streak about one-eighth of an inch wide running the whole length of the anterior pillar. Lott[4] has also described and Chevalier Jackson illustrated a similar sign. It consists of a narrow, sharply limited and very dark red zone on the anterior pillar in front of the tonsil. Lott regards it as an important distinguishing feature of an infective tonsillar focus in which streptococci predominate. In Lott's experience when a tonsillar focus of this nature is present tonsillectomy will yield good results in arthritis, neuritis, &c.—I am, Sir, yours faithfully,

W. S. THACKER-NEVILLE,
M.D. (T.C.D.), F.R.C.S. Edin.

Harrogate, May 24th, 1928.

THE TREATMENT OF ULCERATIVE COLITIS.

To the Editor of THE LANCET.

SIR,—The discussion on ulcerative colitis at the Harveian Society[5] did not evince nearly so pessimistic a view of the results of treatment, medical or surgical, as correspondents have assumed. The appearance of pessimism is probably due to a very grave series of figures quoted by one speaker. The results which I gave personally when opening the discussion are as follows: Among 15 private patients since the war 2 have died; both these finally died in hospital. These are the only deaths which I have had in hospital and there have been 10 other hospital patients, a total of 2 deaths among 25 patients. None of these cases was treated surgically. May I repeat the opinion expressed in the discussion that there is no justification for the appalling mortalities recorded?

One often reads such statements as "medical treatment was tried and failed." The question, of course, arises as to what was the medical treatment adopted. As it is laid down in the literature and actually applied in practice, medical treatment not uncommonly resolves itself into a combination of opium, starvation, and medicated enemata, a course of treatment which would produce ulcerative colitis in most healthy persons. I am not here criticising surgical treatment—that is appendicostomy—as described by Mr. Norbury at the Harveian Society discussion, and by Mr. Lockhart-Mummery in your columns. It is a valuable and rational procedure though, I believe, unnecessary. But a protest is needed against what is described and employed as "medical treatment." There is at present in the wards at St. Thomas's a girl who illustrates what can be done in a very severe case by the methods I described at the Harveian Society. On commencing treatment her weight was 52 lb., and she had been losing ground rapidly. She now weighs over 8 st. I would like also to mention the question of diet which I did not refer to at any length during the discussion at the Harveian Society. I agree with everything which Mr. Lockhart-Mummery has said in his letter as to the importance and possibility of giving a considerable diet. It is pitiful to recognise that cases of ulcerative colitis are often starved not by the diarrhœa but by unnecessary deprivation of food.

I cannot comment on the favourable results of serum treatment which Dr. Hurst and Dr. Ryle have obtained. This has, unfortunately, not been the experience of myself and many others. But I am certain that neither of these experienced physicians have followed the crudities of what is usually described as the "medical treatment of ulcerative colitis."

I am, Sir, yours faithfully,

H. LETHEBY TIDY.

Devonshire-place, W., May 21st, 1928.

[3] Pavey-Smith, A. B.: Practitioner, 1922, i., 2–71.
[4] Lott, H. H.: Surgical Clinics of North America, 1924, iv., 66.
[5] See THE LANCET, April 28th, pp. 857 and 865, and subsequent correspondence.

TUBERCULOSIS AND EMPLOYMENT.

To the Editor of THE LANCET.

SIR,—Medical men who have to deal with larg numbers of employees must often be, as I frequentl am, in considerable difficulty in deciding the importan question: how far they are justified in sending bac to sedentary occupations officials and employees wh have tuberculous disease of the lungs, where th lesions are still unhealed. It is generally assume rightly or wrongly, that in phthisis, where tuberc bacilli are not found in the expectoration, it is sa to send the patient back to work under ordinar office conditions. This may, or may not be wise, bu it is a line of conduct which I think most of us follow The class of case which gives me anxiety, and whic must be a source of uncertainty to others, is whe there is an unhealed tuberculous lesion of the lun with tubercle bacilli still present. In these cases the is often a very considerable increase of weight, th patient looks well, his cough is slight, he has minimum amount of expectoration, *but* the tuberc bacilli are still present. Frankly I find a prop decision in this class of case an exceedingly difficu one, having in mind the conditions under which wo must necessarily be carried on. It would be inte esting to know what the view of the Ministry of Healt is. So far it seems to have remained discreetly silen and I fear the only answer we shall ever get is th "it depends on circumstances"—and this does n take us any further.

I am, Sir, yours faithfully,

JOHN COLLIE.

Porchester-terrace, W., April 27th, 1928.

CONDITIONED REFLEXES IN ASTHMA.

To the Editor of THE LANCET.

SIR,—When demonstrating the wide applications Pavlov's work in a leading article last week you p forward an asthma theory which has been so oft advocated by psychologists that I should like—on more—to give a fraction of the case against it.

No one can doubt the great part played by psych logical reflexes in producing the asthma syndrom It is perfectly true that—to take hay-fever for o example—a hay-fever patient develops what I ta to be a conditioned reflex from, say, the sight of sunny hayfield; he may even develop such a refl from the sight of a rose made of wax if he happens think that his trouble derives from roses. This do not explain how he can infallibly (and at any tir of the year) pick out by a skin reaction a wate extract of grass pollen from a dozen other unkno fluids. The observer may make him expect that o of the other fluids will give the specific reaction, b his skin is not deceived. A worse difficulty for th who believe that a primary emotional stimul provokes the disease is the Prausnitz-Küstner reactio These workers found that the liability to the dise may be transferred to a normal individual (or to part of him) by injecting into him serum taken fr a patient who is liable to an attack. It is difficult see how one could transfer the liability to a condition reflex in this way.

I am, Sir, yours faithfully,

Devonshire-place, W., May 21st, 1928. J. FREEMAN.

IMPORTATION OF YATREN.—Representations ha been made to the Board of Trade that yatren (iodo o quinoline sulphonic acid) should be exempted from d under the Safeguarding of Industries Act (1921) on grounds that it is not made in any part of His Majest Dominions in quantities which are substantial hav regard to its present consumption in the United Kingd and that there is no reasonable probability that it within a reasonable period be made in His Majest Dominions in such quantities. Communications concern these representations may be addressed to the Princi Assistant Secretary, Industries and Manufactures Dep ment, Board of Trade, Great George-street, London, S.W before June 15th.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

National Health Insurance Bill.

Experimental Clinics.

On Clause 14,* which deals with surplus funds of approved societies, Mr. Rhys Davies moved in Subsection (3) to leave out para. (7). He said that he understood the Minister of Health and the Parliamentary Secretary to say on the second reading of the Bill that it was the intention to set up experimental clinics in respect of dental and ophthalmic treatment. He took it that the whole country could not be covered with clinics, and that when a clinic was set up in a particular town, the insured person could not be compelled to attend it. If they compelled him they took away his freedom of choice. He would like the Minister to make it perfectly clear that there would be freedom of choice. This was one of the most important clauses in the Bill. The two professions, the dental and the optical, fell into different categories. The dental profession had definitely secured their status. The antagonism between them and the British Medical Association was not as great as the antagonism between the medical profession and the people who practised optics. An approved society at the present time did not compel an insured person to go to an ophthalmic surgeon but some approved societies would pay the expenses of an ophthalmic surgeon, who would give the patient a prescription to take to the optician who provided the glasses. The ideal would be to send every insured person to a qualified medical man who had specialised in eye diseases, and for his prescription to be made up by an optician, but as a member of the Departmental Committee which had enquired into the registration of optical practitioners, he was satisfied that many of them would be dead before that ideal stage was reached. Did the Minister intend to lay down by regulation that all insured persons must in the first place be sent to a specialist in eye diseases to obtain a prescription and then take it to an optician, or did he propose to have the dual method of treating these people by allowing the two systems to continue?

Dr. Vernon Davies said that the majority of general practitioners had no interest in the examination of eyes or spectacles. The British Medical Association stated that there were in this country about 1000 doctors who were experts in ophthalmology, and who were prepared to work under the scheme. The hon. Member said that perhaps this number was not enough. What he (Dr. Davies) suggested was that the British Medical Association and the profession generally should be given a change. If they undertook to do this work it should be the duty of the Minister to accept their offer to run the scheme.

Mr. Chamberlain said that he had already given a definite pledge in the House of Commons that a free choice must remain a cardinal feature of any scheme that was introduced. He was prepared to accept an amendment which would place the point beyond all doubt. It was an amendment standing in the name of Mr. Whiteley which would be moved at a subsequent stage. He was quite prepared that the normal course which he would pursue was that if he found it necessary to enter into arrangements through his Department without the assistance of representatives of other bodies, before coming to a final conclusion with any of the professional bodies with whom he might be negotiating, he would submit the proposed terms to the Consultative Council so that the views of the societies as a whole could be stated. He certainly did not intend to authorise the setting up of a dental clinic by an approved society managed solely by that society. These experimental clinics were to be experimental and managed by a joint body representing both the professional classes and the representatives of approved societies. He thought the Committee fully appreciated the difficulties in connexion with the question of the opticians and the ophthalmologists. They had a large number of cases of eye defects which were due to some mechanical fault in the construction of the eye, and all that was required to put them right was to fix a glass suitable to correct the mechanical fault. On the other hand, there were other defects of sight not caused by mechanical alterations or faults in the construction of the eye, but were caused by disease. He was advised that it was not always a simple matter to decide whether the trouble from which the patient was suffering was due to disease or to a mechanical condition of the eye which might or might not have been caused by disease. If it had been brought about by disease it was a matter upon which skilled advice was necessary. What one obviously desired to obtain was that the insured person should have the opportunity of getting in every case such advice as would give him the treatment he required, or the correct mechanical appliance, if that were necessary. He did not think it was possible at that stage to lay down a general rule or regulation providing that every insured person who was suffering from an eye defect must go to an ophthalmic surgeon first. There was not always such a surgeon handy, and it was not the intention of the regulation to enforce a practice which he did not think could actually be carried out.

Lieut.-Colonel Fremantle said he had been asked by the representatives of the Dental Service Association, and also the British Dental Association, to bring this question forward. The Dental Association felt very strongly the danger that clinics might be set up and managed by approved societies and that they might get back to the old position which was certainly not in the interests of the insured person, under which medical and dental clubs were run by approved societies who made a profit out of the professional work, and did not give proper attention to medical considerations. That difficulty was met in general by the Insurance Act, and they did not want to get to that situation. He thought he might say for the medical profession generally that in this matter they would support the dental profession, and they were opposed to any such practices as those he had mentioned. The Minister had said that he was ready to provide that no clinic should be managed by an approved society. He (Lieut.-Colonel Fremantle) was not competent to give the opinion of the societies that had approached him, but they suggested that there were dangers if any body of persons set up a clinic, and they would naturally demand to have a voice in the management. They trusted to the Minister to see that regulations were made providing that the management must give fair weight to professional circumstances and considerations and should not unduly consider the financial side and strength of approved societies. He thought the Minister had made out a case for regulations which, speaking from a point of view of administration, they could not resist. He wished, however, that the procedure could be improved so as to give them greater facilities for supervising the regulations.

Colonel Sinclair said that notwithstanding the substantial concession which the Minister had given, particularly to the medical men, for which he was grateful, he had some anxiety about the sanctity of the free choice of dentist in respect of the dental clinics. The Act of 1921 required that dentists should be registered, and a very heavy annual fee was obtained from them not only for registration at the beginning, but also for renewal each year. One's sympathies went out to the struggling dentist, and he would like an assurance from the Minister on one point. In establishing the dental clinics under this Bill certain dentists would be selected to serve, and it seemed to him that those dentists would be placed in a favourable position as compared with outside dentists. They had had an assurance that there would be a free choice of dentists, but he would like to know how the competition between the dentists who were connected with the clinic and the outside struggling dentists would be maintained.

Mr. Chamberlain: I am afraid that I cannot give my hon. friend any further assurance than that I gave most definitely to the House.

Mr. Davies's amendment was, by leave, withdrawn.

Further Amendments.

The following amendment in the name of Mr. Whiteley was agreed to without discussion:—

In Subsection (3), new Subsection (7), at the end, to insert the words: "Provided that such Regulations shall not restrict the right on the part of any insured person to obtain treatment from any practitioner, clinic, or other institution with whom arrangements with respect to that form of treatment have been made in accordance with the Regulations."

Mr. Womersley moved the following amendment:—

In Subsection (3), new Subsection (7), after the words last inserted, to insert the words: "Provided that any Regulations made under the Act shall not restrict the right of any insured person to obtain ophthalmic treatment of an optical character from any optical practitioner who has been hitherto engaged in sight testing and the supply of optical appliances under the National Health Insurance Acts and whose qualifications may be regarded by the Minister of Health as providing a safeguard in these respects."

The amendment was negatived.

Mr. Briant moved:—

In Subsection (3), new Subsection (7), after the words last inserted, to insert the words: "Provided that no such Regulation shall provide for or authorise the establishment of a dental clinic by an approved society or the use of the funds of such society for the purpose of defraying the cost of the equipment for or maintenance of such clinic, nor shall such Regulation in any way specify the dentist or clinic or other institution from whom any insured person is to receive treatment or in any way

* The first part of the discussion on Clause 14 appeared in our issue of last week (p. 1047).

restrict the right of any insured person to select the dentist or clinic or other institution from whom such person wishes to receive treatment."

The amendment was negatived.

The Committee adjourned.

The National Health Insurance Bill was further considered by Standing Committee C of the House of Commons on May 8th. Sir R. SANDERS was in the chair.

Employment Within the Meaning of the Act.

On Clause 17 (which amends the principal Act as to employments within the meaning of the Act),

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) moved an amendment providing that the Minister of Health might make a special Order in cases where there was more than one owner of a fishing vessel, providing that a specified person should be deemed to be the employer for the purposes of the Act. He said the object of his amendment was to bring under the National Health Insurance scheme workers such as shore fishermen, who were at present excluded on the ground that they were not technically employed under contract.

After some discussion Sir Kingsley Wood's amendment was agreed to on his giving an undertaking that before his Department prepared the special Order, and considered who would have to make the contribution in respect of the employer, they would consult the local associations and other bodies on the subject.

New Clauses.

Sir KINGSLEY WOOD moved a new clause providing that regulations might be made requiring that in the case of investments arising out of business under the Act they should be transferred to the joint names of the Minister of Health and two or more of the trustees of an approved society; or, if the society so requested, to the name of the Minister alone.

The clause was agreed to, and added to the Bill.

Sir H. NIELD moved a new clause empowering insurance committees to make contributions to a fund to provide superannuation allowances or other benefits for their officers or servants.

Sir KINGSLEY WOOD accepted the clause, which he said was so drafted as to enable the Minister of Health to satisfy himself, with the advice of the Government actuary, that any scheme designed for the benefit of staffs of insurance committees was sound, and power was also given to them to review the operation of the scheme from time to time.

The clause was agreed to, and added to the Bill.

Maternity Benefit.

Dr. DRUMMOND SHIELS moved the following new clause :—

Subsection (1) of Section 14 of the principal Act shall have effect as if the following words were added at the end thereof: "in addition to treatment and attendance by a duly qualified medical practitioner or by a duly certified midwife."

He said the amount of maternity benefit provided by the principal Act was 40*s*., and the new clause would provide that this amount of benefit should be given in addition to treatment and attendance by a duly qualified medical practitioner or by a duly certified midwife. While the problem of maternal mortality was a very difficult one and included many factors, there was no doubt that the importance of adequate attendance at the time of birth, and for a certain time thereafter, was recognised as one of the most important elements in the problem. It was quite well known that the amount of money which was given for maternity benefit, and which had in a number of cases been increased beyond the sum mentioned in the Act, was not always expended for medical attendance or for the attendance of a midwife; and one could easily understand why that should be so. Whatever difficulties might be found in the working out of this clause they ought to be faced and surmounted. The country was very much concerned at the fact that while they had reduced ordinary mortality-rates very considerably, and were steadily and constantly reducing infantile mortality-rates, the mortality-rate for women in and immediately after childbirth had practically remained stationary for the last 100 years. As a partial attempt, at any rate, to solve this problem, he thought the committee would do well to accept this clause.

Sir KINGSLEY WOOD said he thought the whole committee would be quite sympathetic with the object which Dr. Shiels had in view. The Minister of Health was very much interested in, and concerned with, the question of maternal mortality. The committee would be well aware of the steps which his Department were taking to get more light upon that difficult problem. But he could not advise the committee to accept this amendment for two reasons. The first was the purely technical one, that if Dr. Shiels wanted to deal with the provision in relation to maternity benefit, he ought to do so under Section 10 of the original Act. But the real reason was that this amendment, if it were adopted, would cost the National Insurance scheme an additional £1,500,000 a year. Dr. Shiels did not tell them where he was going to get this money from. It was obviously impossible at this stage of the Bill to accept an amendment of this kind, which would seriously upset the finances of the whole scheme, and put the approved societies under great difficulties.

Lieut.-Colonel FREMANTLE said he was glad to hear from Sir Kingsley Wood that there was no dispute as regards the serious question which was raised here, and the necessity for facing it. It was a matter to which he hoped the approved societies would turn their attention. He was afraid that approved societies did not always look at matters from the same point of view as he did.

Mr. RHYS DAVIES: As the medical profession do!

Lieut.-Colonel FREMANTLE said those societies were very often concerned with the financial needs of their members instead of with their medical needs. They had, however, to face the fact that, as Sir Kingsley Wood had pointed out, they could not raise the £1,500,000 necessary under this amendment, but he wished again to enforce what he hoped was the general sense of the committee and of the House—namely, that it was necessary to meet the very serious needs which had been referred to, and he was very glad that the Parliamentary Secretary had expressed his official sympathy with that object.

Dr. SHIELS said he quite recognised that at present according to the system and arrangement of the scheme there was no money available, but it was quite obvious from reading the report of the Royal Commission that money could be obtained if certain arrangements were made. He was very anxious that approved societies, as well as some others, should take this matter into very serious consideration, and should be willing to agree to certain arrangements which might make what he had suggested possible. The first consideration under the Act was to give an adequate medical service, and he certainly thought that medical and midwifery attendance, which was recognised to be of first importance, should be a statutory benefit. He had put this amendment forward to emphasise that view, and having done so he would ask leave to withdraw the clause.

The clause was by leave withdrawn.

Dental and Ophthalmic Treatment.

Mr. RHYS DAVIES moved a new clause providing that dental and ophthalmic treatment should be included in the list of statutory benefits under the Bill.

Sir KINGSLEY WOOD said that a complete dental service which they all agreed would be eminently desirable, would cost about £4,500,000 a year, and would add to the contributions in connexion with national insurance about 1½*d*. a week. Obviously this amendment must fall to the ground because there was no financial provision to meet such a charge. While they could understand a member of the medical profession not paying much regard to where the money was coming from, they did expect a little more from Mr. Rhys Davies.

Lieut.-Colonel FREMANTLE: I must protest against that remark about the medical profession.

Mr. RHYS DAVIES asked leave to withdraw the clause. The clause was by leave withdrawn.

Other Amendments.

Mr. RHYS DAVIES moved a new clause empowering an approved society with branches on a two-thirds vote to contribute a proportion not exceeding one-third of the distributable surpluses of the branches to the creation of a central fund which would provide the members with specified minimum of additional benefits.

Sir KINGSLEY WOOD opposed the new clause on the grounds that the societies were themselves divided upon the proposal, that the Royal Commission had made no recommendation on it, and that the Consultative Committee had also made no suggestion with regard to it.

The amendment was defeated by 21 votes to 11.

Dr. WATTS moved a new clause providing payment for X ray examinations in cases of fracture or suspected fracture where such examination was recommended by the insurance practitioner.

Sir KINGSLEY WOOD said he hoped Dr. Watts would not press this amendment, which, though it might be desirable, would mean increased cost.

The clause was negatived.

Dr. SHIELS moved an amendment to the first schedule of the Bill (which is to be substituted for the third schedule to the principal Act). The amendment proposed to add at the end of paragraph 1 the words "in the case either of all members of the society or of such of them as have any children or any specified number of children wholly or in part dependent upon them." He said the schedule dealt with the additional benefits which were allowed to be given. There were some additions, but there were at least two items which were left out, and which were in the original

Act. The effect of the amendment would really be to replace paragraph 1 as it originally stood. The principle of dependent's allowances had been admitted by the Unemployment Insurance Act, and it was agreed that it worked equitably, and gave a fairer distribution of the money available than a flat rate to the recipients quite independent of the burdens or dependents which they had. Therefore he did not consider it desirable or wise to drop altogether from the schedule, what was regarded by the Royal Commission as a very important item, and he did not quite see why it was done.

Sir KINGSLEY WOOD said this provision had been deleted from the scheme, not at the instance of the Ministry of Health, but on the direct recommendation of the Royal Commission. If they were going to have a scheme of allowances to dependent children they should not allow a society here and there to put into operation a scheme of this kind, which was very unfair to other societies, but they should do it as a general scheme under the Act.

The amendment was rejected by 17 votes to 8.

The committee adjourned.

Additional Benefits.

The committee further considered the Bill on May 10th. Sir R. SANDERS was in the chair.

On the First Schedule (which deals with additional benefits),

Lieut.-Colonel FREMANTLE moved to insert after paragraph 7 the following new paragraph: "The payment of the whole or any part of the cost of medical or surgical advice or treatment by any registered medical practitioner, not being advice or treatment within the scope of any other additional benefit or of medical benefit, under a special scheme approved by the Minister for the purpose." He said this new paragraph was passed unanimously at a meeting of the Parliamentary Medical Committee last week, and he thought it represented the general opinion of the medical profession. They wanted to extend the Insurance Act as far as possible by degrees where required, supplementing it where possible by skilled advice. They all knew the limitations of the Act, but they also recognised that there were great advantages in having expert advice from time to time in various forms. First of all it took the form of surgical operations or advice by surgeons, who from the nature of their work, and their eminence, could not be retained permanently as part of the panel system. Secondly, it required skilled consultation, which would often save a very great deal of sickness, and therefore would be an economical proposal in order to give real assistance to panel practitioners. In the third place it included special treatment, such as X ray treatment and other specialties. From the medical point of view he objected to the first seven places in the Schedule being taken up by what were really cash benefits. Medical men looked upon the insurance scheme as one for prevention and treatment, and on cash benefits as being only secondary to that. Therefore, though he should prefer to see this new paragraph at the top of the schedule, he moved it as No. 8 in order that it might take priority of the other additional benefits which more or less corresponded to some form of medical treatment. This proposal was economical, elastic, and optional; and he thought it should meet with general support.

Dr. SHIELS, in supporting the amendment, said he regarded it as a very unsatisfactory substitute for the provisions made in line with the recommendations of the Royal Commission as part of the statutory benefits. The Royal Commission recommended this as the very first necessary change to provide an adequate service. At present they had a scheme which was called the National Health Scheme, which was incomplete, and left out at the most important time the services to insured persons of a specialist, who might be able by early intervention to prevent very serious happenings. However, as a second best it was important that this should go in under the heading of possible additional benefits. The health side of the National Insurance scheme had not been so prominent, or so much emphasised, as it ought to have been. He hoped the Government would accept the amendment.

Mr. MELLER said he would have been very kindly disposed towards the amendment if there had been a proper realisation of what the schedule really meant. Dr. Shiels imagined that the recommendations of the Royal Commission included one that specialist service should be extended to additional benefits. As a matter of fact, the Commission recommended that there should be an extension of the medical service as a statutory benefit as and when the money was available. What was happening to-day in regard to additional benefits in the nature of medical benefits was that the medical profession and the hospitals as well were saying to the people who were in the habit of going to a hospital for extended service, which could not be given by the panel practitioner, that if their society was providing dental and ophthalmic treatment the help originally given by the voluntary hospitals must be cut off. If this proposal were accepted within the scope of additional benefits he was afraid that there would be more pressure put by the medical profession on insured persons to get their societies to devote a proportion of their surplus funds for the provision of this benefit. He agreed that this would be for the benefit of the insured persons, but incidentally and materially it would also be for the benefit of the medical practitioners. What the Royal Commission said was: "We realise the necessity for extended medical service," and putting it in the order in which they recommended these things, they said "as soon as possible and as soon as the societies have funds let us have this extended and complete system of service as a statutory benefit." They were not dealing that day with it as a statutory benefit, and therefore he thought the committee ought not to consider it.

Mr. RHYS DAVIES said if this proposal were adopted, the ordinary patient would go to his panel doctor, who might say to him that the disease from which he was suffering could not be treated by him as a panel practitioner. The patient would have to come to the doctor in another category. The panel doctor might say to the patient: "You require specialist service, and you must ask me to give you specialist treatment, and I can get paid for that under this new provision." They already had 16 additional benefits, not more than half a dozen of which had ever been adopted. What was the use of deceiving the insured population by pretending they were going to do something they knew full well could not be done?

Mr. CHAMBERLAIN (Minister of Health) said he agreed with Mr. Davies that it was a mistake to add benefits which were not likely to be used to the number of benefits already existing, thereby encouraging competition among the societies. But when the hon. Member went on to argue against the provision of a specialist service as an additional benefit on the ground that it was going to lead to the exploitation of the insured person by the medical practitioner, he would point out to him that that argument would apply just as much to the provision of the specialist service as a statutory benefit as to its provision as an additional benefit.

Mr. RHYS DAVIES: I agree.

Mr. CHAMBERLAIN said that Mr. Davies, therefore, was arguing against the provision of a specialist service at all. There he came into conflict, not only with Dr. Shiels, but with the Royal Commission, who decided that the advantages and benefits to the insured population of having recourse to specialists outweighed all the disadvantages. It was only the fact that the method of providing these services recommended by the Royal Commission was so strongly objected to by the approved societies themselves that prevented specialist service becoming a statutory benefit. A panel doctor could not pose as a specialist and extract fees from his patients as a specialist unless first of all he satisfied his insurance committee on two things—that the particular complaint he was treating was beyond the competence of an ordinary general practitioner to treat, and that he himself possessed the competence as a specialist to treat it. He (Mr. Chamberlain) thought that ought to be a safeguard against any general malpractice such as had been suggested.

Mr. RHYS DAVIES: Has the right hon. gentleman's Department ever been able to say where the dividing line comes in between specialist treatment and the ordinary medical practitioner's work?

Mr. CHAMBERLAIN: I am told that there are dozens of decisions.

Mr. RHYS DAVIES: That makes my case all the stronger.

Mr. CHAMBERLAIN said that he would tell the committee the argument which finally decided him in favour of the amendment. In paragraph 15 of the Schedule one of the additional benefits already provided was:—

> "Payments to approved charitable institutions in respect of any treatment of members required for the prevention or cure of disease, not being treatment within the scope of any other additional benefit or of medical benefit."

That meant that a society could select as an additional benefit specialist treatment in an approved charitable institution. It had been argued that that was weighing the balance unfairly against treatment by the private practitioner, and that if they said that specialist services might be provided in institutions they ought at least to give the society the opportunity of getting those same specialist services through private practitioners if they preferred it. He thought that there was something in that argument. The acceptance of Lieut.-Colonel Fremantle's amendment would remove any stigma of preferential treatment in this matter; it would make a fair distribution. Societies were not obliged to adopt this particular benefit, and if it was not adopted it could be removed from the list at some future date.

The amendment was agreed to.

Lieut.-Colonel FREMANTLE moved to insert in the First Schedule after the words agreed to. the following new paragraph: "The payment of the whole or part of the services of a midwife or medical practitioner in cases of confinement." He said that he was sorry that on the previous amendment he gave Mr. Rhys Davies the impression that he was putting forward something in the name of the medical profession in their own interests. He entirely dissociated himself from that idea. They were dealing with this matter from the point of view of the public service. They knew the very difficult cases which midwives had to deal with and how they were accountable, among other causes, for the terrible maternal mortality which was one of the chief things which the health system of this country had to deal with. Statutory maternity benefit was cash benefit, and the result was that in many cases the maternity benefit was eaten up by other necessities and proper provision was not made for the attendance of a midwife or a medical man. He put in the words "or general practitioner" in order to include all cases, but he asked that approved societies might be allowed, as was the case now in some societies operating in rural areas, to provide for the services of the midwife herself in addition to the payment of the standard cash benefit.

Sir KINGSLEY WOOD said that standard maternity benefit was 40*s*., but a very large number of societies had increased it, and the average amount paid was about 46*s*. There had been a tendency from the first for the whole of the sum paid by way of maternity benefit to be demanded as a fee by the doctor attending the confinement and as the amount had increased from 30*s*. to 40*s*., and later to an average of 46*s*., so the doctor's fee had shown a tendency to increase pari passu. He agreed, however, that there was a good deal to be said for a reconsideration of the methods by which they dealt with this matter under national health insurance. At the present time a subcommittee of the Consultative Council were considering it to see whether any recommendations could be made and whether any agreement could be obtained. In the meantime he did not think it was desirable to include in the list of medical benefits an item of this character.

Dr. SHIELS said he thought that Sir Kingsley Wood had very adroitly taken advantage of the prejudice of certain hon. Members against the medical profession. Everyone was agreed that the Ministry of Health were very much interested in this subject and had shown great sympathy towards any possible solution of the difficulty of maternal mortality. Amid all the proposals to deal with that grave problem the provision of adequate midwifery was absolutely essential. It was true that in considering this matter the Royal Commission pointed out that it ought to be linked up with some national scheme, especially in relation to local authorities. He would be prepared to delete the words "or medical practitioner," and he would be glad if the Government would agree to that.

Sir KINGSLEY WOOD: No, I think we had better await the report of the expert committee.

The amendment was negatived.

Lieut.-Colonel FREMANTLE moved to include in the list of additional benefits medical treatment or attendance for any person dependent upon the labour of a member.

Sir KINGSLEY WOOD said that it would be absolutely impossible for approved societies to-day to attempt to give by way of additional benefits medical attendance to the dependents of insured persons.

Dr. SHIELS said that the object of the amendment would be served if it pointed out once again that this was not really a National Health Insurance scheme at all; it left out the dependents of the insured person and established unequal health standards in the community.

The amendment was negatived.

Dr. VERNON DAVIES moved an amendment to include in the schedule of additional benefits payments to women in the last weeks of pregnancy who had to leave their employment on account of that condition.

Mr. CHAMBERLAIN said that the amendment was very vaguely worded and he could not recommend the committee to accept it.

On a division 17 voted for the amendment and 17 against. The Chairman gave his casting vote against the amendment, which was accordingly rejected.

The Committee stage was concluded and the Bill as amended was ordered to be reported to the House.

MINISTRY OF HEALTH VOTE.

On Tuesday, May 15th, the House of Commons went into Committee of Supply on a vote of £13,774,025 for the salaries and expenses of the Ministry of Health. Mr. JAMES HOPE, Chairman of Committees, was in the chair.

In the course of the discussion which followed the speech of Mr. CHAMBERLAIN, Minister of Health, reported in last week's issue of THE LANCET (p. 1048),

Mr. BRIANT said he could not share the optimism of the Minister in regard to

The Housing Problem.

At present there were 3,000,000 people living in overcrowded and insanitary conditions, and the present rate of progress was too moderate; facts were not faced. They had to support hundreds and thousands of men and women because they were broken down owing to bad housing conditions, and money spent would be economy.

Mr. A. GREENWOOD said that in so far as the Minister of Health was making new and special efforts to deal with maternal mortality, rheumatism, and other great problems of public health, he would have the support of the Labour Party. The solution of the difficult slum problem depended in the first instance on an increasing supply of new houses. The housing functions of the Ministry of Health were becoming mechanised and old fervour was being dissipated. A jog-trot production would not sufficiently deal with the whole housing situation. In reference to the administration of the poor-law, instead of looking forward the Minister was looking backward to 1834 and trying to drive boards of guardians into a perfectly inhuman administration of the poor-law system. When the Minister was speaking about maternal mortality and the horrors of the slums, he was pitying the very people who were being dealt with so harshly to-day under the present methods of administering the poor-law and the treatment of the unemployed.

Lord H. CAVENDISH-BENTINCK entered a protest against the policy of reconditioning. Many of the houses which it was proposed to recondition ought to be pulled down. He wished to plead for concerted action on behalf of the enormous army of casuals in this country. The Metropolitan Asylums Board was showing the way to a more intelligent policy in regard to the classification of applicants for relief. The Ministry of Health, either by law or by persuasion, should get statutory committees appointed in every county all over the country so that there might be a coördinated policy with regard to the people who drifted from one place to another.

Mrs. RUNCIMAN said that in one of the big industrial towns recently the medical officer of health reported that in the case of 1000 confinements in the district in only 284 cases was a separate room available. In 12 cases four other persons had to share the same room, and in another case five, while in yet another case even eight persons had no other accommodation. Over 400 of these houses were shared by two or more families.

Lieut.-Colonel FREMANTLE said he thought rather an exaggerated idea was being given of the lack of houses that still remained. On the figures of the two censuses of 1911 and 1921 there was a definite shortage in 1921 of 304,000 houses in England and Wales. Since then it had been reckoned that allowing one house per family they required an increase every year of, roughly, 72,000 houses. Taking into account the necessary replacements of old houses, the actual requirements every year were about 120,000 houses and that was a generous estimate. At the rate of 120,000 since 1921 that meant that they had a further need of 840,000 houses in England and Wales. If they added to that the shortage in 1921 census of 304,000 it meant that at the present moment they had a shortage of 1,144,450 houses against the number of houses that had been built. The number of houses built since the Armistice was over 1,100,000; in other words, their shortage was actually, on the 1911 basis, only about 40,000 houses. They were making up that shortage slowly. In the greater part of England they would have reached by the middle of next year, if not by the end of this year, a position which would be above the basis of the 1911 census. What they wanted was a comprehensive scheme dealing with slum clearance by means of new legislation, but he did not think the overcrowding was getting worse.

Compulsory Vaccination.

Mr. GEORGE THORNE said that the whole House would be with the Government in whatever movement they could make, and in whatever money they proposed to spend, to get rid of slum dwellings and to give the children of the country a better chance.

Dr. WATTS thought that the time was fast approaching when the Ministry should be reorganised. It should have taken from it services such as housing, rent restriction, rating and valuation, and the control of boards of guardians except so far as that control related to medical attendance on poor people. Most of these duties, for example, he thought might be transferred to the Home Office, while the Ministry of Health might take over from that office the medical service in connexion with the Factory Acts. He went on to criticise the expenditure incurred upon tuberculosis sanatoria with incommensurate results, and to speak of the difficult position in regard to vaccination. He said that he did not complain of conscientious objection and he was not suggesting that that provision should be done away with

hough personally he thought it should. But for some time ast a great number of people had not only not had their ildren vaccinated, but they had not taken the trouble to ake a conscientious objection. The result was that the w in that respect was practically a dead letter.

Mr. GROVES: Thank goodness!

Dr. WATTS said that Mr. Groves might say that, but he ad probably never experienced an epidemic of small-pox. such an epidemic broke out in his neighbourhood probably e first thing he would do would be to rush off to be accinated.

Hon. Members: No.

Dr. WATTS said he had known conscientious objectors ho had willingly submitted to having a child vaccinated ther than that the child should be prevented from going America. He wanted to point this out to the Minister the hope that something might be done, because those who ew small-pox, and were acquainted with its history, alised that previous epidemics had always been preceded sporadic outbreaks of a wild character; after a number which a virulent epidemic had suddenly burst forth, rrying away thousands of people and crippling and blinding ousands of others.

Mr. GROVES: Does the hon. Member know that they ve abolished it in Holland?

Dr. WATTS said that Holland carried out vaccination ore efficiently than we did in this country, and quoted razil as an example of a country where vaccination was gidly insisted upon. He hoped the Government would ve the Committee some assurance that they intended in e future to carry out both in the letter and the spirit the esent Vaccination Act.

The Case of Mary Race.

Mr. LAWSON raised the case of a child named Mary Race o had died in a diphtheria hospital in circumstances ich he had stated to the Minister of Health necessitated public inquiry. He had received a letter from the Minister the course of which he said that there was no reason to lieve that the child's death was brought about or celerated by lack of nourishment, but he suggested that e officer of the Ministry had made only a perfunctory quiry and did not interview a deputation which had been pointed.

Dr. VERNON DAVIES said that Mr. Lawson had presented one-sided tale. The child was in hospital for six days fore she died, and probably had received the serum and esumably had had a certain amount of nourishment during e six days. It was a very serious statement to make in e House that the Minister of Health was prepared to send responsible medical officer to make an inquiry into a case d that the medical officer had practically perjured himself the purpose of bolstering up the Ministry of Health. e Committee should not forget that the deputation nsisted of people who were ex-guardians who had been rned out of their job for maladministration, and that erefore they were not particularly well disposed towards e Ministry of Health. Speaking of the Minister's speech on the vote, Dr. Davies said that the whole Committee ould recognise that the Minister could only cover a small rt of the ground for which he was responsible, and there re one or two points to which he (Dr. Davies) would like refer.

Cancer.

The Minister of Health had spoken about cancer and the ogress that had been made in the ancillary treatment of at disease, referring particularly to radium treatment, eming to give the impression that the Ministry was anxious help the radiologists to deal with cancer and that they re very hopeful regarding the results. He (Dr. Davies) nted to impress upon the Committee and upon the country at the only safe thing for cancer was early and complete eration. Unfortunately it occasionally happened that ey got cases which were late and inoperable and then haps radium treatment might prolong the life of the tient, or perhaps give him a little more ease; but atever they did they should not get into their heads the a that radium would cure cancer; it could not do it at e present time. It was only a help, and he was afraid at the rather hopeful tone of the Minister of Health might ate a wrong impression in the country and prevent some those poor people from seeking medical advice in the ly stages when something could be done. He was glad at the Minister had dealt with the question of rheumatism, t all who had read the address of the Chief Medical Officer the Ministry of Health at the recent conference at Bath [1] uld have gathered that the Ministry itself was not acting the advice given by its well-informed medical department. e Minister said that there were 400 to 500 beds in the ntry earmarked for the treatment of rheumatism in ldren. That number was almost ludicrous when they realised the number of the sufferers and that with young children the large majority who got rheumatic fever or acute rheumatism developed heart disease.

Maternal Mortality: The Milk-supply.

Turning to the question of maternal mortality Dr. Davies said that the Minister was fully alive to the importance of that subject, but he was not sure that they were using the material which they had at hand to the best advantage. They heard of a shortage of midwives, but it must be borne in mind that the midwife's life was a hard and difficult one and poorly paid. Yet he had known many cases where midwives who were thoroughly trained could not get a sufficient amount of work for the reason that the better-class patients now went to nursing homes and the poorer-class patients went to poor-law hospitals. That was a point which the Minister would have to bear in mind, especially if he was going to increase the number of midwives. Another question which he wished to bring before the Committee was that of milk. A great campaign was going on in the country by which everyone was advised to drink more milk. People were being reminded that milk was a perfect food, that it was rich in vitamins, and that it was the only suitable nourishment for young children or suckling babies; it was also a very useful food for adults and they were doing all they could to see that this country produced good pure milk at a cheap price. This food was so valuable that it had been called one of the "protective" foods, the other being green vegetables, because it did not matter how unsuitable or peculiar the diet of an individual might be provided he included milk and green vegetables in his diet he would not go far wrong. The use of milk as a food was limited to some extent by its price. As a rule ordinary pure milk was too expensive for people living in very poor districts, and they had tinned or condensed milk of which such a large quantity was imported into this country, and the Minister of Health was perfectly satisfied that he was doing his duty to the babies of the country by labelling that milk "unfit for babies," though he knew very well that it was given to babies solely on account of its cheapness. It was essential that the Minister should see that the campaign for the production of pure and cheap milk should be brought to a successful conclusion. Unfortunately milk was very readily adulterated. The report of the Ministry on this subject had been drawn up carelessly. In the figures of percentages mistakes were by no means uncommon. The Committee would be surprised to learn that an examination of the records of the last three years showed that in 50 per cent. of the counties of England there was adulteration in more than 10 per cent. of the samples of milk examined in 1925. In Wales there was adulteration in 69·2 per cent. of the samples. It was a disgrace that there should be in the Ministry of Health a record showing that in one county in Wales 100 per cent. of the samples of milk examined were adulterated and that in the succeeding year not a single sample should have been analysed and that an explanation of this state of affairs should be forthcoming. The administration of the Act dealing with adulteration operated in such a way as to save the purchasers' pockets and was not regarded from the point of view of health. That was a great mistake. The administration of the Sale of Food and Drugs Act with regard to foodstuffs and milk should be taken out of the hands of the police and put into the hands of the local health authority. He urged that the Minister of Health should pay special attention next year to the defects which undoubtedly had existed in the administration of this Act in order to see if he could not get for the poor people a good, clean, healthy, and unadulterated milk-supply.

Birth Control.

Sir BASIL PETO said that there was no question that unreasonably frequent births under miserable conditions must be a contributory cause of maternal mortality. Deaths due to attempted abortion was also a material contributory cause of that mortality. He believed that there was another question which had a very close bearing on it, and that was the prevalence of venereal disease. On the main question of the undue frequency of births, he took to the Minister in July, 1925, a deputation of Members of the House of Commons to ask that the very restrictive regulations with regard to welfare centres and antenatal centres should be relaxed, their object being that the medical officer in charge should have unfettered discretion to give or to withhold, according to the medical condition of the case before him, information with regard to birth control. Within a couple of days the Minister told him that he proposed to modify the Regulations and gave him a copy. The second part of the formula as it now read was as follows:—

"It is not the function of an antenatal centre to give advice in regard to birth control, and exceptional cases where the avoidance of pregnancy seems desirable on medical grounds should be referred for particular advice to a private practitioner or a hospital."

[1] THE LANCET, May 12th, p. 981.

That was, then, to be altered in this way:—

"Where, however, in any particular case the avoidance of future pregnancy seems desirable on medical grounds, it is open to the medical officer of the centre, if he or she thinks it necessary, to explain to the mother how and where the appropriate information or advice can be obtained."

He (Sir B. Peto) did not, nor did the other hon. Members who were interested in the question, regard that as satisfactory. He could not see why, if it was left to the discretion of the medical officer, male or female, to deal with such a question, he should be instructed practically to withhold the advice, but to send the patient somewhere else to a wholly unsuitable place—namely, one of the general hospitals or to a special medical adviser, which in the case of a poor woman was really derisory advice, and advice which she could not follow. No alteration whatever was made in the regulations. In April, 1926, the question was raised in the House of Lords by Lord Buckmaster, and the resolution then moved was passed in spite of the opposition of the Government by 57 votes to 44. He hoped that the Government would not tell the Committee that there was no restraint put upon these doctors, for it was clearly understood that if the doctors sent their patients to get information elsewhere there was a great risk of the Government assistance to these clinics being withheld. Passing to venereal disease, he said that the Ministry of Health confined itself to dealing with the disease after it had taken hold, and refused to apply any preventive measures or allow the civil population access to preventive measures. In both the Army and Navy admirable results had followed from preventive measures. He wanted to know whether the Minister could say now, as was said by the Minister in 1925, in answer to a deputation of the combined societies—the Social Hygiene Council and the Society for the Prevention of Venereal Disease—that the recommendation of the report, now six years old, should be given effect to. He (Sir B. Peto) urged that it was not reasonable or right to allow the policy of the Ministry of Health to be governed purely by the opinion of one religious sect or another.

Mr. PETHICK-LAWRENCE asked what steps the Government had taken already to classify the maternity death-rate. The question of birth control was a difficult and delicate one. But he was convinced that they could not found morality upon ignorance. Any attempt to do so in the twentieth century was foredoomed to failure. Women belonging to one class already had that knowledge, and he was quite certain that if the information was not given to women scientifically and reverently by those who were the officers of the State they would obtain it in other ways less correct, and very likely much more injurious. When that undesirable form of information had been disseminated among women it would be very difficult to eradicate it. The Ministry of Health would be making a grave mistake if they did not see that the time had come to reconsider their original decision.

Mr. BLUNDELL said that there was not the slightest shadow of evidence that the failure of maternal mortality figures to diminish had been due to the failure of the maternity and child welfare clinics to give information about birth control. He wondered if the supporters of birth control had read the report of the medical officer of health for Birmingham for 1926. If they had done so, although that gentleman was himself a professed advocate of birth control, he (Mr. Blundell) thought that they would get information there which would cause them to have doubts before they advocated the teaching of these practices in public clinics.

Sir Kingsley Wood's Reply.

Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health), replying to the debate, said that he had some sympathy with the speech of Dr. Watts, and he felt that there was a good deal in what that hon. Member had said. He would point out that the total cost of poor-law administration in money and kind for last year was over £15,000,000 as compared with £5,750,000 in 1921. In the administration of such a large sum of money due care had been exercised and at the same time justice and fairness had been done to the people concerned. He was surprised that Mr. Lawson, who had held a ministerial position himself, should have thought fit to make such an attack on the bona fides and honesty of one of the inspectors of the Ministry of Health. That officer, and he believed the whole of the people concerned in the case which Mr. Lawson had raised, had no other wish than to ascertain the truth and report correctly and honestly to the Minister of Health. If Mr. Lawson would consult any medical Member of the House he would be told that no question of under-nourishment affected either the disease of diphtheria or the unfortunate death of the child which followed. Inquiries had been made since the matter was raised of both the father and aunt of the child, and it appeared that she was perfectly well nourished, and up to the day of the onset of her illness the relieving officer himself stated that he had never noticed any signs of malnutrition in any of the childre of this family, while a medical practitioner of long experienc who had known the child since birth was satisfied when h saw her on a material date that there was no sign of anythin of the kind. The Ministry of Health were fully satisfie that there was no foundation for the allegations. The matte raised by Sir B. Peto was a highly controversial and difficu one. The Minister of Health and his Department took th view that the present formula that was directed to th conduct of the maternity centres should be maintaine They would maintain that formula until the House Commons came to a contrary decision. It would be a greg pity if the excellent work of these centres, numbering ov 2000, which were attended by about a third of the mothe who gave birth to children, were involved in a controvers of this kind. In regard to the speeches made in the debat on the question of housing he (Sir K. Wood) thought if o could not be optimistic about what had been done i relation to housing in this country one must be a ver pessimistic person indeed. While the Ministry felt that th corner had been turned in regard to housing they did n consider that their work in that matter had ceased. The intended to go on with the housing programme and contin the considerable work which was being done by loc authorities in regard to the repair of houses.

HOUSE OF COMMONS.

TUESDAY, MAY 22ND.

Voluntary Hospitals and Motor Accidents.

Mr. LUNN asked the Minister of Health whether, i view of the great increase in cases caused by motor acciden which had to be dealt with by the hospitals, he would tak steps to call a conference between representatives of th voluntary hospitals, insurance companies, and other organis tions concerned, for the purpose of drafting a scheme t cover the expenses of the treatment of cases caused by mot accidents.—Sir KINGSLEY WOOD replied: My right ho friend must receive and consider the forthcoming fin report of the Voluntary Hospitals Commission befo deciding whether to take action on the lines which the ho Member suggests. (In reply to a previous question was stated that the report would be issued this month.)

The Services.

ROYAL NAVAL MEDICAL SERVICE.

A. R. Ewart and M. Clifford to be Surg. Lts.

Surg. Comdrs: C. M. R. Thatcher to Greenwich, continuation, and as Naval Health Officer and Medic Transport; F. C. Hunot to *Victory XI.*, for R.N. Hosp Portland; and G. D. Fergusson to *Maine;* J. S. Orw to *Royal Sovereign* (on recommg.); and G. E. D. El to *Victory XI.*, for Portland Dockyard.

Surg. Lt.-Comdrs: A. B. Grant to *Cambrian*, and J. Clarke to *President*, addl., for three months' post-gradua course.

ROYAL ARMY MEDICAL CORPS.

Maj. (Temp. Lt.-Col.) B. Biggar from the Secd. List restd. to the estabt. and relinquishes the temp. rank Lt.-Col.

Capts. D. H. Coats, G. T. Garraway, and P. G. Russ to be Majs.

A. MacMillan to be Lt. on prob.

ARMY DENTAL CORPS.

The undermentioned Lts. to be Capts.: F. F. Ansl and W. B. Purnell.

RESERVE OF OFFICERS.

Lt.-Col. R. McK. Skinner, having attained the age-lin of liability to recall, ceases to belong to the Res. of Offs.

SUPPLEMENTARY RESERVE OF OFFICERS.

B. R. Crossley to be Lt.

TERRITORIAL ARMY.

Maj. F. R. Harris, having attained the age-limit rel quishes his commission.

Maj. A. Morris, having attained the age-limit, retires, a retains his rank with permission to wear the prescrib uniform.

ROYAL AIR FORCE.

The undermentioned are granted permanent commissio in the ranks stated: Flight Lts. F. B. C. Lindes B. Crawford, and R. G. Freeman.

Flight Lt. T. Sheehan relinquishes his temporary co mission on completion of service and is permitted to ret his rank.

Medical News.

UNIVERSITY OF LONDON.—At a meeting of the Senate held on May 16th, with Sir William Beveridge, the Vice-Chancellor, in the chair, Dr. Geoffrey Hadfield was appointed as from May 1st to the University Chair of Pathology tenable at the London School of Medicine for Women.

Dr. Hadfield received his medical education at St. Bartholomew's Hospital, where he was Harvey Prizeman in Physiology and Junior Scholar in Anatomy and Biology in 1908. He graduated in 1911, and proceeded to the M.D. degree (Pathology) two years later, being awarded the University Gold Medal. After resident appointments at St. Bartholomew's Hospital and at the Metropolitan Hospital, he was for a time medical registrar to the Dreadnought Hospital, Greenwich. He served in the Royal Army Medical Corps from 1914–19, since when he has been, respectively, recognised teacher, demonstrator, and assistant internal examiner in the Pathological Department of the University of Bristol. During this time he has been Pathologist, Bacteriologist, and Clinical Pathologist to the Bristol General Hospital, and since 1922 he has also been consulting Pathologist to the Bristol Mental Hospital, and other institutions.

Mr. Percival Hartley, D.Sc., was appointed as from August 1st, 1929, to the University Chair of Biochemistry tenable at the London School of Hygiene and Tropical Medicine.

Educated at the Technical College, Bradford, and the Yorkshire College, Leeds, Dr. Hartley obtained the B.Sc. degree of the Victoria University, Manchester, with first-class honours in chemistry in 1904. After research work at the University of Oxford, and at the Lister Institute, where he held a Grocers' Company research scholarship, he became D.Sc. Lond. in 1909. For the next four years he was physiological chemist to the Imperial Bacteriological Laboratory at Muktesar, United Provinces, India, and in 1913 he was appointed first assistant to the head of the Biochemical Department at the Lister Institute. From 1915–19 he was on war service with the R.A.M.C. in France and Belgium; from 1919–21 he was head of the Biochemical Department, the Wellcome Physiological Research Laboratories, and since 1922 he has been on the staff of the National Institute for Medical Research, Hampstead. In 1927 he held the William Julius Mickle Fellowship, and was appointed honorary secretary of the Medical Research Club.

The title of Professor of Experimental Pathology in the University was conferred on Dr. Archibald Leitch in respect of the post held by him at the Cancer Hospital.

From 1906–08 Dr. Leitch was assistant director of Middlesex Hospital Cancer Research Laboratory, and from 1908–12 director of the Caird Cancer Laboratory, Dundee. He was also Research Fellow at St. Andrews University from 1909–12. From 1912–20, except when on war service, he was pathologist to the Cancer Hospital, and since then he has been director of the Research Institute at that hospital.

The title of Reader in Pathological Chemistry in the University was conferred on Mr. C. R. Harington, Ph.D., in respect of the post held by him at University College Hospital Medical School.

From 1919–20 Dr. Harington was part-time demonstrator in Medical Chemistry in the University of Edinburgh, and from 1920–22 research assistant in the department of therapeutics. Since 1922 he has been lecturer in Pathological Chemistry at University College Hospital.

The Dunn Exhibitions in Anatomy and Physiology for 1928 were awarded to Mr. J. D. H. Bird, an internal student, of King's College.

ROYAL COLLEGE OF SURGEONS, EDINBURGH.—At a meeting of the College, held on May 18th, Mr. Alexander Miles, the President, in the chair, the following 25 successful candidates, out of 84 entered, who passed the requisite examinations between Jan. 2nd and 7th, were admitted Fellows:—

Elsie V. Crowe, Alexander Cumming, F. W. Duthie, Philip Carson, Bernard Gluck, C. D. Gossage, Clermont Grantham-Hill, G. A. Hardwicke, Alfred Hobson, L. Wynn Houghton, C. W. Isaac, J. R. Learmonth, F. I. Lewis, E. O. Lloyd, Beatrice H. Lynn, C. R. McCash, B. L. McFarland, Samuel McMahon, E. C. Mekie, F. G. Phillips-Turner, F. E. Stayner, S. M. Vassallo, G. I. Wilson, C. L. Walker, and J. F. Zohrab.

The Higher Dental Diploma was conferred on Norman Gray and T. W. Watts.

The Bathgate Memorial Prize was awarded, after a competitive examination in Materia Medica, to J. I. Meikle.

THE decoration of Chevalier of the Legion of Honour has been conferred by the French Government on Mr. F. J. Morrin, surgeon to Jervis-street Hospital, Dublin. Mr. Morrin is medical adviser to the French Consultate in Dublin. Last year, while in France, he was involved in a railway accident at Abbeville, and rendered assistance to the injured. He was formerly head of the medical service of the National Army of the Irish Free State.

UNIVERSITY OF EDINBURGH.—Dr. F. A. E. Crew has been appointed to the new Buchanan Chair of Animal Genetics.

METROPOLITAN ASYLUMS BOARD.—Lord Doneraile was appointed chairman, and Mr. George Brittain vice-chairman, at a meeting of the Board on May 19th.

Sir StClair Thomson has been elected a corresponding member of the Société de Laryngologie des Hôpitaux de Paris, of the American Stomatological Association, and of the Philadelphia Laryngological Society.

THE SAMUEL AUGUSTINE COURTAULD INSTITUTE OF BIOCHEMISTRY at the Middlesex Hospital Medical School will be opened on June 14th, 1928, at 3.30 P.M. Sir Archibald Garrod will give an address.

RESEARCH DEFENCE SOCIETY.—The annual general meeting of this society will be held at 11, Chandos-street, Cavendish-square, London, W., at 3 P.M. on Tuesday, June 19th. The Stephen Paget Memorial Lecture will be delivered by Sir Bernard Spilsbury, whose subject will be the Work and Responsibilities of a Pathologist.

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS.—The fourteenth annual conference will be held in the Great Hall of the British Medical Association House in Tavistock-square on Monday and Tuesday, Oct. 15th and 16th. The subjects for discussion are the Occurrence of Tuberculosis among Primitive People, and the Principles Underlying a Scheme of Antituberculosis Measures in any Country.

WILLIAM MACKENZIE MEMORIAL MEDAL.—The first award of this medal, given in recognition of valuable contributions to ophthalmology, will be made to Dr. A. Maitland Ramsay, honorary director of the James Mackenzie Institute for Clinical Research, St. Andrews, and consulting ophthalmic surgeon to Glasgow Royal Infirmary. The presentation will take place in Glasgow, in the autumn, when Dr. Ramsay will deliver an address.

THE FOUNDLING SITE.—The court of governors of the Hospital for Sick Children in Great Ormond-street has approved the proposal for rebuilding it on the site of the Foundling Hospital should the site be obtainable. Mr. Stanley Hall, F.R.I.B.A., the architect consulted, reported that rebuilding was imperative and urgent, and that to reconstruct the hospital on the present site would be attended with "grave disadvantages as regards air, light, and health conditions generally."

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The annual dinner was held in the Hall of the College last Saturday evening, Mr. Andrew Fullerton, President, in the chair. There was a large assembly of Fellows and guests. In proposing the health of the Governor-General, the President expressed the regret of the College at his absence from the dinner, and its hopes for his speedy restoration to health. He then gave the toast "Prosperity to Ireland," and spoke of the contribution toward that prosperity that could be made by the surgical profession. Replies were made by Lord Glenavy, Chairman of the Senate of the Irish Free State, and by Mr. R. J. Johnstone, a Member of the Parliament of Northern Ireland. Other speakers were Sir F. Conway Dwyer, Dr. R. W. Leslie, Sir John Moore, and Mr. James McMahon. At the end of the dinner Lord Glenavy, on behalf of the Council of the College, presented the President with a silver salver in recognition of his services to the College.—The annual elections in the College take place in the first week of June. Mr. T. E. Gordon, the present Vice-President, is the only candidate for the Presidency, and Mr. R. A. Stoney is a candidate for the Vice-Presidency.

REDUCTION OF NEONATAL MORTALITY.—The National Baby Week Council states that in 1926, in England and Wales, 48,757 children died in the first year of life, and that 45 per cent. of these deaths occurred in the first 28 days. The Council has recently received statistics from English towns in connexion with an offer of prizes by the *Daily News* for the greatest reduction in the neonatal death-rate during 1927, as compared with the previous five years' average. In the group of towns with a population of 100,000 and upwards, Leyton reduced its neonatal death-rate to 18·07 per 1000, a reduction of 35 per cent. on the previous five years; Bethnal Green to 19·97, a reduction of 26 per cent.; and Shoreditch to 23·31, a reduction of 20 per cent. Among the towns with a population of 50,000 to 100,000 Finchley reduced its neonatal death-rate to 12·7, Bath to 20·9, and Carlisle to 24·1, the reductions being 53, 36, and 33 per cent. respectively. The prize offered to the district which showed the greatest number of new-born lives saved goes to Lambeth, with Middlesbrough and Salford next in order.

MEMORIAL TO SIR WILLIAM LEISHMAN.—As we have already announced, a memorial tablet to the late Sir William Leishman, F.R.S., will be unveiled in the chapel of the Queen Alexandra Military Hospital, Millbank, S.W., at 11.30 A.M., on Saturday, June 2nd.

THE HIGHLANDS AND ISLANDS MEDICAL SERVICE. Major Walter Elliot, M.P., Under Secretary of State for Scotland, has opened the enlarged and modernised Stornoway Hospital and the extended Lewis Sanatorium. Major Elliot referred to the fact that in the Island of Lewis the number of cases of tuberculosis is proportionally three times as high as on the mainland.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL.—It was reported at the annual meeting of governors that the number of beds had grown from 87 in 1907 to 309 in 1927, the in-patients from 469 to 1716, and the out-patients' attendances from 9806 to 79,422. Over £108,000 has been collected towards the £125,000 required to complete the extensions in Great Portland-street and at the country branch at Stanmore.

UNIVERSITY OF LONDON ANIMAL WELFARE SOCIETY. Prof. F. T. G. Hobday, principal of the Royal Veterinary College, will take the chair at a public meeting to be held at King's College, Strand, at 5.30 P.M., on Thursday, May 31st, when addresses will be given on Man's Duty to Animals. Admission will be free without ticket. The society is precluded by its constitution from engaging in controversies relating to scientific experiments on animals.

BRITISH ASSOCIATION.—The preliminary programme of the annual meeting of the British Association for the Advancement of Science, which will be held this year at Glasgow, has now been issued. On Sept. 5th Sir William Bragg, F.R.S., who will be President of the Association in succession to Sir Arthur Keith, F.R.S., will deliver an address on Modern Developments of the Physical Sciences and Their Relation to National Problems. Sectional meetings will be held daily from Sept 6th to 12th, except on Saturday and Sunday. The Presidents of the Physiological and Psychological Sections are Prof. C. Lovatt Evans, F.R.S., and Prof. T. H. Pear. A detailed programme may be had from the secretary of the British Association, Burlington House, London, W. 1.

BRACEBOROUGH SPA.—This spa, which has a history of 100 years, was reopened on Saturday last, May 19th, by the Earl of Ancaster in the presence of a large company, medical and lay, who were entertained later at luncheon by the Mayor and Corporation of Stamford and the directors of the company responsible for carrying on the work of the development of the spa. The waters of Braceborough Spa were first recommended to George III. by Dr. Francis Willis, who resided at Braceborough. The king, who suffered at this time from a skin affection, bathed at Braceborough, it is said, with favourable results; the site of the bath in which he bathed has been preserved, and on it there have been erected now a small pump room and baths. It has been estimated that the amount of water available from the springs daily is 200,000 gallons, and, according to Dr. Alfred Eddowes, consulting physician, St. John's Hospital for Diseases of the Skin, it has now been found successful in the treatment of many of the conditions amenable to balneology, especially psoriasis. At the civic luncheon Dr. Harold Pritchard, senior physician to the West London Hospital, spoke warmly of the development of spa treatment and its value to the public.

THE LATE MR. W. J. FOSTER.—The death occurred at Boscombe on May 11th of Mr. William James Foster, consulting surgeon to the Royal Berkshire Hospital. He qualified in 1890 and became F.R.C.S. Eng. two years later, after holding a number of house appointments at St. Mary's Hospital, where he had received his medical training. In 1893 he went to Reading as successor to the late Dr. Richardson, and in 1899 he was appointed assistant surgeon to the Royal Berkshire Hospital, becoming full surgeon in 1914. During the war he was in charge of one of the main surgical blocks of the Reading War Hospital, with a captain's commission in the R.A.M.C. (T.). A pioneer in radiographic work in Reading, he had much to do with developing the X ray department at the Royal Berkshire Hospital, and his opinion as a radiologist was especially valued by his colleagues, as it was backed by expert surgical opinion. Mr. Foster kept himself well abreast of advancements in surgery and, besides his professional work, took a keen interest in the management of the hospital, of which he was senior surgeon at the time of his retirement in 1924. On leaving Reading he settled in the Bournemouth district and ultimately built a house at Boscombe. He leaves a widow and one daughter.

TRAINING AND EMPLOYMENT OF MIDWIVES.—The Minister of Health has appointed a Departmental Committee, whose terms of reference are: "To consider the working of the Midwives Acts, 1902 to 1926, with particular reference to the training of midwives (including its relation to the education of medical students in midwifery), and the conditions under which midwives are employed." The Committee is appointed with the concurrence of the Central Midwives Board, and its appointment forms part of the measures for dealing with the problem of maternal mortality and morbidity. The members are: Sir Robert Bolam, F.R.C.P. (chairman), Dr. J. W. Bone, Dame Janet Campbell, M.D., Lady Cynthia Colville, Dr. W. A. Daley, Dr. J. S. Fairbairn, Dr. T. Eustace Hill, Miss Alice Gregory, Mr. A. B. Maclachlan, Dr. F. N. Kay Menzies, Mrs. Bruce Richmond, and Miss Stephenson. The secretary will be Mr. W. H. Howes, of the Ministry of Health, to whom communications may be addressed.

GIFT TO A CHILDREN'S HOSPITAL.—Sir Gomer Berry, chairman of the committee of management of the Infants Hospital, Vincent-square, London, has given £50,000 to the hospital as a memorial to his wife. It will be used for the erection of a new maternity block.

Medical Diary.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

THURSDAY, May 31st.—10 A.M. to 12.30 P.M., LARYNGOLOGY AND OTOLOGY. Summer Meeting. *Papers:* Mr. Rake Achalasia and Degeneration of Auerbach's Plexus Mr. A. J. Wright: Silent Tracheotomy, Its Significance tion. Dr. Lowndes Yates: Methods of Estimating the Liability to Post-operative Hæmorrhage from Unsutured Wounds. Mr. W. M. Mollison: Dysphagia Due to Pharyngeal Paralysis. 2.30 P.M. to 4.30 P.M. *Papers:* Dr. Jobson Horne: Cancer of the Vocal Cords. Dr. Watson-Williams: Familial Infectivity of Chronic Sinusitis. Sir StClair Thomson: Intrinsic Cancer of the Larynx Operated Through a Laryngo fissure. (Lantern demonstration of immediate and lasting results in 70 cases.)

FRIDAY, June 1st.—10.30 A.M. to 12.30 P.M., LARYNGOLOGY AND OTOLOGY. *Papers:* Prof. Dr. Otto Mayer, of Vienna (Dalby Prize Winner): The Pathology of Otosclerosis. Dr. A. Lowndes Yates: A Working Hypothesis for Research in Otosclerosis. Mr. Harold Kisch: The Use of Temporal Muscle Grafts in the Radical Mastoid Operation. Mr. Douglas Guthrie: Fat Grafting in Mastoid Surgery. 4 P.M. to 6.30 P.M. *Cases and Specimens* will be shown by Mr. E. D. D. Davis, Mr. Alexander Tweedie, Mr. Douglas Guthrie, Dr. T. B. Jobson, Sir James Dundas-Grant, Mr. Harold Kisch, Mr. M. Vlasto, Mr. Herbert Tilley, Mr. V. E. Negus, Mr. Norman Patterson, Mr. J. A. Gibb, and Mr. Broughton Barnes. The Library will be open until 10 P.M. *Dinner:* Members will dine together, at the Hotel Victoria, at 7.45 P.M. The Dinner (to which ladies are invited) will be followed by a dance.

SATURDAY.—10.30 A.M. (Cases at 9.30 A.M.) LARYNGOLOGY AND OTOLOGY. *Papers:* Prof. G. Portmann (Bordeaux): Vasomotor Affections of the Internal Ear. Mr. W. S. Sharpe: The Influenza Ear. *Cases and Specimens* will be shown by Dr. T. A. Clarke (introduced by Mr. Cleminson), Dr. T. B. Jobson, Sir James Dundas-Grant, Mr. Harold Kisch, Mr. W. Ibbotson, Mr. T. B. Layton, Dr. O. Popper, Dr. Dan MacKenzie, and Mr. Norman Barnett. There will be a display of instruments and apparatus in Rooms 3 and 4 during the period of the summer meeting.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.

FRIDAY, June 1st.—8.30 P.M., General Meeting. Papers will be read by Dr. L. S. T. Burrell and Dr. S. F. Gloyne on Syphilis in Relation to the Ætiology and Diagnosis of Tuberculosis. A discussion will follow.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.

WEDNESDAY, May 30th.—5.15 P.M. (at the London School of Hygiene and Tropical Medicine, Endsleigh-gardens, Euston-road), Dr. Joaquin J. Vallerino (Panama): Lantern slide demonstration on the Value of X Rays in Intestinal Amœbiasis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, May 28th, to SATURDAY, June 2nd.—ST. PETER'S HOSPITAL, Henrietta-street, Covent Garden, W.C. Clinical urological demonstration by Mr. Ogier Ward at 2 P.M. on Wed.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Clinical demonstration by Dr. H. C. Semon from 4.30 to 5.30 P.M. on Thurs. The above are free.—ST. JOHN'S HOSPITAL, Leicester-square, W.C. Post-graduate course in Dermatology every afternoon.—NATIONAL HOSPITAL, Queen-square, W.C. Cour

in Neurology for two months. Particulars and tickets from the Fellowship of Medicine. Further particulars from the Secretary.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith-road, W.

TUESDAY, May 29th.—10 A.M., Medical Registrar: Medical Wards. 2 P.M., Dr. Shaw: Medical Out-patients. 2 P.M., Mr. Hamblen Thomas: Throat, Nose and Ear Department.

WEDNESDAY.—10 A.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2.30 P.M., Mr. Donald Armour: Surgical Wards.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 2 P.M., Mr. Simmonds: Surgical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY, June 1st.—10 A.M., Dr. Pritchard: Medical Wards. 12 noon, Dr. Ironside: Clinical Demonstration. 2 P.M., Mr. Vlasto: Throat, Nose and Ear Department.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy Department. 10 A.M., Dr. Owen: Children's Medical Out-patients.

Daily, 10 A.M. to 5 P.M., SATURDAYS, 10 A.M. to 1 P.M., In-patients, Out-patients, and Special Departments. Anæsthetic and Operative Surgery Courses.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

WEDNESDAY, May 30th.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

THURSDAY, May 31st.—4 P.M., Mr. J. Swift Joly: Practical Points in Urinary Disease.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, May 31st.—5 P.M., Dr. G. V. Anrep: Pathology of Conditional Reflexes.

NATIONAL HOSPITAL, Queen-square, W.C

TUESDAY, May 29th.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Hinds Howell: Subacute Combined Degeneration.

THURSDAY.—3 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30, Dr. Walshe: Neurosyphilis (2).

FRIDAY, June 1st.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Mr. Elmquist: Demonstration of Re-educative Exercises (in Exercise Room).

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C.

THURSDAY, May 31st.—5 P.M., Dr. W. J. O'Donovan: Skin Diseases of Animals Transmissible to Man.

FRIDAY, June 1st.—5 P.M., Dr. W. Griffith: Bullous Eruptions.

MIDDLESEX HOSPITAL MEDICAL SCHOOL, Cleveland-street, W.

TUESDAY, May 29th, WEDNESDAY, May 30th, and THURSDAY, May 31st.—5.30 P.M, Dr. John Eason: Graves's Disease.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

FRIDAY, June 1st.—3.30 P.M. (at the Royal Hospital), Dr. Mackie: Strabismus.

Appointments.

GERRARD, E. A., M.B., Ch.B. Manch., has been appointed Resident Obstetric Surgeon to St. Mary's Hospitals, Manchester.

GRAHAME, E. W., M.B., Ch.B. Glasg., Second Assistant Medical Officer to the Croydon Board of Guardians.

IVY, S. I., F.R.C.S. Eng., L.R.C.P. Lond., Assistant Surgeon to the London Jewish Hospital, Stepney Green, E.

KINNER, T. E., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Wivenhoe.

KILLOUGHBY, W. M., M.D., B.Chir. Camb., D.P.H., Medical Officer of Health, City of London.

Bolingbroke Hospital, Wandsworth: LLOYD, W. E., M.D. Lond., M.R.C.P. Lond., Honorary Physician; and LUMSDEN, A., M.B., Ch.B. Aberd., Out-patients' Officer, Ophthalmic Department.

Leeds Public Dispensary: MCADAM, W., M.D., Ch.B. Glasg., F.R.C.S. Lond., Hon. Physician: and MOIR, P. J., M.B., Ch.B. Glasg., F.R.C.S. Eng., Hon. Surgeon.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. Sen. H.S. At rate of £200. Also H.S. At rate of £150.

Belfast, Ulster Hospital for Children and Women.—Hon. P. Also Hon. Asst. P.

Bethnal Green Hospital, London, E.—Asst. M.O. £400.

Birmingham and Midland Eye Hospital, Church-street.—H.S. £110.

Birmingham City Education Committee.—Asst. Sch. M.O. £600.

Burnley, Primrose Bank Institution.—Res. M.O. £300.

Cambridge, Papworth Village Settlement.—Second Asst. M.O. £250.

Cambridge University Pathological Laboratory.—John Lucas Walker Studentship. £300.

Cancer Hospital, Fulham-road, S.W.—H.S. At rate of £100.

Carlisle, Cumberland Infirmary.—Jun. H.S. At rate of £135.

Central London Throat, Nose, and Ear Hospital, Gray's Inn-road, W.C.—Out-patient Statistical Reg.

City of London Hospital for Diseases of Heart and Lungs.—Two H.P.'s. At rate of £100.

Derby, Walton Sanatorium, near Chesterfield.—Locum Res. Asst. M.O. At rate of £350.

Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £300.

Down County Regional Education Committee.—Sch. M.O. £750.

Eastbourne, Princess Alice Memorial Hospital.—Jun. H.S. At rate of £100.

East London Hospital for Children and Dispensary for Women.—H.P. At rate of £125.

Essex, Administrative County of.—Three Asst. County M.O.H.'s. Each £600.

General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.

Hastings, Royal East Sussex Hospital.—Hon. Asst. Surg.

Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. £250. Also H.P. and H.S. Each £50.

Ipswich, East Suffolk and Ipswich Hospital.—Hon. Asst. Ophth. S.

Leamington Spa, Warneford General Hospital.—Res. H.P. £165.

L.C.C. Mental Hospitals' Service.—Eighth Asst. M.O. £300.

Manchester, Ancoats Hospital.—H.S., Orthopædic. £100.

Manchester City.—M.O. £600.

Manchester Northern Hospital for Women and Children.—Sen. H.S. and Jun. H.S. £130 and £100 respectively.

Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300.

Manchester Royal Eye Hospital.—Sen. H.S. £150. Jun. H.S. £120.

Manchester, Salford Royal Hospital.—Hon. Asst. P. Also Cas. H.S. At rate of £125.

Newport, Mon., Royal Gwent Hospital.—Hon. S., two Hon. Asst. S.'s. Also Hon. Asst. Ophth. S.

Nottingham City Mental Hospital.—Deputy Med. Supt. £650.

Plumstead and District Hospital, High-street, S.E.—First Asst. M.O. £400.

Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Second Res. O. £175.

Pudsey, Borough of.—M.O.H., &c. £273.

Queen Mary's Hospital for the East End, E.—H.P.'s, H.S.'s, &c.

Queen's Hospital for Children, Hackney-road, E.—Cas. O. Also H.S. Each at rate of £100.

Royal College of Physicians of London.—Charles Murchison Scholarship in Clin. Med. 20 guineas.

Royal College of Physicians of London and Royal College of Surgeons, England.—Streatfeild Research Scholarship in Med. and Surg. £250.

Royal Free Hospital, Gray's Inn-road, W.C.—H.S.'s, H.P.'s, &c.

Royal Naval Medical Service.—Surg. Lieutenants. £453.

Royal Northern Hospital, Holloway, N.—Clinical Asst.

St. Mary Abbots Hospital, Marloes-road, W. 8.—Asst. M.O. £250.

St. Mary's Hospital, W.—Surg. Reg. £200.

St. Thomas's Hospital Medical School.—University Chair of Dietetics. £1000.

Stafford, Staffordshire General Infirmary.—H.P. At rate of £150.

Surrey County Sanatorium, Milford.—Med. Supt. £900.

Swansea Hospital.—H.S. £150.

Tunbridge Wells, Tonbridge Union Institution, Pembury.—Asst. M.O., &c. £275.

University of London, South Kensington, S.W.—Sir William Dunn Chair of Pathology. £1330.

Warrington Infirmary and Dispensary.—Jun. H.S. £175.

Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.

West London Hospital, Hammersmith-road, W.—H.P., H.S., Res. Asst. Cas. O. Also Aural and Ophth. H.S. Each at rate of £100.

Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Salford and Stretford (Lancashire).

Births, Marriages, and Deaths.

BIRTHS.

DULAKE.—On May 18th, at South-walk, Reigate, Surrey, the wife of Lawrence Dulake, M.B., B.S., of a son.

MILLER.—On May 16th, at 514, Fulham Palace-road, S.W. 6, the wife of T. Duff Miller, M.D., F.R.F.P.S., of a son.

DEATHS.

CLARKE.—On May 22nd, 1928, at 3, Chandos-street, Cavendish-square, W., Kate Litton, the dearly loved wife of Ernest Clarke, C.V.O., M.D., F.R.C.S.

HARRIS.—On May 18th, at Beresford-road, Birkenhead, Alfred Charles Edward Harris, M.B., F.R.C.S. Edin., J.P., aged 77 years.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

OPENING OF THE PRINCESS LOUISE KENSINGTON HOSPITAL FOR CHILDREN.

THIS new hospital, of which the out-patient department has been in use since last December, was formally opened by the King and Queen on May 21st. Originally founded as a dispensary in 1840, the hospital became the Kensington Dispensary and Children's Hospital in 1896, when a ward of 11 beds was added to the inconvenient building in Church-street, Kensington, where out-patient clinics were held. Largely owing to the energy of Princess Louise, Duchess of Argyll, the old site was sold in 1925 and a new site purchased at the corner of St. Quintin's-avenue, North Kensington.

Good response was received to the appeal for the £80,000 needed to build a modern hospital for children. At the end of 1926 the foundation stone was laid and in 1927 an honorary medical staff of high standing was appointed. Accommodation for between 30 and 40 beds is available in the two ward blocks already erected and it is hoped, when funds permit, to build a nurses' home, so as to release the upper floors for the reception of 40 more cots. Provision for out-patients includes ophthalmic, ear, nose and throat, orthopædics, X ray, electrical treatment, and massage departments. A special arrangement enables beds to be reserved for L.C.C. school-children undergoing the operation for tonsils and adenoids, in order that they may be retained in the hospital for two nights. The hospital is also responsible for providing a school treatment centre for L.C.C. school-children, and for this some financial assistance is received. There is also a special centre for the care and investigation of rheumatism in children. Women out-patients receive medical treatment, but there is no in-patient accommodation for them.

The population of Kensington is approximately 94,000 and a children's hospital has long been needed. The King, when opening the hospital, referred to the close association between the Royal Family and the Kensington Dispensary and praised the prudent and far-sighted policy shown in the selection of the site.

The honorary medical staff of the hospital, some of whom were presented to the King, are as follows:—Consulting physician: Sir William Willcox. Consulting surgeon: Sir Herbert Waterhouse. Physicians: Dr. P. Montague Smith and Dr. Sydney A. Owen. Surgeons: Mr. Neil Sinclair, Mr. R. M. Handfield-Jones, and Mr. Eric Lloyd. Assistant physicians: Dr. Douglas Rice-Oxley, Dr. Janet Aitken, and Dr. R. C. Lightwood. Assistant surgeon: Mr. Robert Paton. Ear, nose, and throat surgeon: Mr. G. Douglas Robertson. Ophthalmic surgeon: Mr. A. E. Loosely. Dermatologist: Dr. Lewes N. Gibbes. Anæsthetists: Dr. Ernest F. Travers, Dr. Aileen Chester, and Mrs. Audrey Marsden. Medical officer in charge of Electrical Department: Dr. J. F. Carter Braine. Radiologist: Dr. H. M. Worth. Dental surgeon: Mr. L. Russell Marsh. Pathologist: Dr. Robert Donaldson.

"TO MOTHERS AND FATHERS."

THE sub-title of this booklet,[1] compiled by the Association of Infant Welfare and Maternity Centres, is "How to Keep Yourselves and Your Children Well and Strong." It is now in a ninth edition, and the publishers state that the sales have approached half a million. This success may be attributed to the soundness of the teaching, the simplicity with which this teaching is presented, and the low price. Though the book is intended as a health guide for parents, they are warned that it cannot replace expert medical advice, and in the very first paragraph the expectant mother is recommended to put herself in the hands of a skilled doctor or midwife, who alone is in a position to judge of the normality or otherwise of her condition. A hopeful attitude is the prevailing tone, and emphasis is laid on the desirability of preventing troubles rather than putting them right when they have developed. The matters treated with gravity are those which should be so treated—miscarriage, complications of pregnancy, artificial feeding, infantile diarrhœa, colds and their sequelæ in children, and the like.

There is a useful explanatory chapter on adenoids, and another on the common infectious diseases. The chapters on management and character training are full of practical wisdom.

[1] Published by the National League for Health, Maternity and Child Welfare. 1928. Pp. 82. 6*d.*, post free.

THE ORGANISATION OF HOSPITALS.

To the Editor of THE LANCET.

SIR,—I would be glad to receive some information as regards the general organisation of hospitals in England. The reorganisation of the British hospital at Buenos Aires is under consideration. A point has been raised as to whether the staff of the hospital should or should not be represented on the committee of management. The view of the staff is that each year they should elect a member to represent them on the Committee, so as to establish a point of contact between the two bodies. The view of the Committee is that such is not the custom in British hospitals, and, even if it were, it has no advantage.

I should be much obliged if you could give me some information as to what is the custom in England.

I am, Sir, yours faithfully,

ROBERT E. HALAHAN.

Buenos Aires, April 19th, 1928.

*** There is no rule on this subject. In many English hospitals the medical staff are represented on the management; probably in quite as many they are not. There are advantages in the staff being represented.—ED. L.

NURSERY SCHOOLS.

ON the whole the President of the Board of Education rebutted with considerable success the attacks made last week in the House of Commons on its recent policy, but the lack of nursery schools hardly seems to be receiving sufficient attention from him. Mr. Trevelyan, who in Committee of Supply moved the reduction in the vote for the salaries and expenses of the Board of Education, criticised the large classes in our elementary schools and the unsatisfactory state of many school buildings, but it was to his plea for greater care of the child between the ages of 3 and 6 that medical opinion is likely to give strongest support. The chief medical officer of the Board of Education is known to have the extension of the number of nursery schools greatly at heart, and apt quotations of words from his pen in praise of their activities formed a convenient weapon for the critics of Government policy. The arguments used by Mr Trevelyan, Mr. P. Harris, and Lady Astor were not easy to answer and indeed no attempt was made to answer them. Instead the President emphasised his view that the chief problems of his department were the provision of better education for older children in the elementary schools and better opportunities for their further education when they left school. No one can deny the urgency of these needs, but they seem to be occupying him to the exclusion of those of the child at the other end of the scale. There are only 26 nursery schools in this country, accommodating 1361 children. Of these schools 11 were provided by private enterprise. The average proportion of diseased and delicate children entering elementary schools at the age of 5 is, according to Lady Astor, from 30 to 40 per cent., whereas among those who attend nursery schools the proportion is only 7 per cent. Statisticians might protest that the population at risk is so very much smaller in the latter group that the figures are hardly comparable; but the remarkable difference in health and nutrition of children who have been under constant supervision from infancy to school age is not in dispute. The gap in medical supervision between the infant welfare centres and the elementary schools is responsible for the development of certain diseases which are very much more expensive to cure than to prevent. Since 1918, when special provision was made for the establishment of nursery schools, local authorities have been slow to take advantage of their powers to establish them. More active encouragement from the Board of Education will be necessary.

"RHODIAN" CIGARETTES.

WE have received from Messrs. Lambert and Butler a sample of cigarettes made exclusively from Rhodesian grown tobacco which they claim to be the first "all-British" cigarette. The methods of producing Rhodesian tobacco have greatly improved in the last few years and the "Rhodian" cigarettes have a flavour which many will appreciate. They are slightly larger in size than the average cigarette and are put up in popular boxes of 10 and 20.

The Past in Picture.—To-day (Friday), at 3 P.M., an exhibition of Naval, Military, and Historical Pictures will be opened at the Parker Galleries, 28, Berkeley-square, Mayfair, London, by Earl Beatty, and will remain open daily from 10 A.M. till 6 P.M., except on Saturdays, when it will close at 1 P.M. A well-illustrated booklet forms an introduction to the collection.

A Lecture
ON THE
OVARIAN HORMONE.

Delivered at the Institute of Pathology and Research, St. Mary's Hospital, on May 10th, 1928,

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COMMERCIAL medical literature, and more particularly that emanating from America, would seem to indicate that it is more or less waste of time to go over such well-established and worked-out ground as that of the ovarian hormone. I could read you innumerable extracts from commercial publications proving conclusively that the whole question of ovarian substitution therapy has been completely worked out, and that the physician has only to buy the tablets and supply them to his patients. This type of literature with its horrible jargon and incredible claims has put the subject in a distasteful position. It is desirable, therefore, to see where we really do stand. I propose to make a very brief historical summary and then to attempt to show the various experimental researches leading up to the isolation of the ovarian hormone, concluding with a few remarks on the clinical aspect.

HISTORICAL SUMMARY.

The fact that the ovaries are associated with sexual characteristics has been known for a long time, and this knowledge has been in the possession of farmers and breeders from time immemorial. Although the effects of complete ovariectomy have been studied for generations, it would appear that only comparatively recently has the possibility of substitution therapy in human beings been thought of. When one explores the literature in the hope of finding the first workers to suggest substitution therapy, there arises the difficulty common to all such researches; when what is apparently the earliest observation on this problem is selected and put forward as the first experiment, it is usual to find that another worker can produce a set of experiments dating from an earlier period. I will, therefore, quote some of the earlier work without prejudice, however, as to whether it is really the earliest observation.

In the year 1900 Knauer[1] performed an elaborate series of experiments in which animals were spayed, and after they had remained in a quiescent state for a considerable period, their sexual activities were reawakened by ovarian grafts. From this he concluded that the ovaries possessed an internal secretion responsible for the phenomena of œstrus, and that they had a function quite apart from their main and obvious one—namely, the production of ova. During the same year, Theodore Landau[2] studied the effects of administering ovarian tissues to patients suffering from climacteric symptoms, and in addition he gave his preparations to young women who had undergone the operation of double oöphorectomy. According to this worker, the result of his experiment was entirely satisfactory, the symptoms were abated, menstruation was established, and the patients improved rapidly upon treatment.

These publications caused a considerable amount of interest in this subject and many papers appeared from the year 1900 onwards. A typical example can be quoted in the work of Mainzer, 1903.[3] In order to test whether the effects of the treatment were due to suggestion, Mainzer performed a series of control experiments. Without the knowledge of the patient he substituted dry meat for the ovarian tissue, and found that the patient immediately relapsed into her former state; from this he concluded that the amelioration of symptoms could be attributed solely to the administration of the ovarian tissue. The method of preparing this material was extremely crude. The ovaries were merely dried at a low temperature and the resultant material made up into tablets. It would be possible to continue almost indefinitely to quote observations of this type, results which, according to the publications, were entirely satisfactory. One great point in all these investigations to be noticed is that the workers give the tissue by the mouth. As we shall see later it is difficult to understand the good results, because the workers of late years have shown that the extract by mouth is inactive. There is one exception to the oral administration: Federoff[4] injected crude extracts subcutaneously and intravenously. But, since he only reports the effects of his extracts upon the blood pressure and pulse-rate, one can conclude that his material was very toxic.

EXPERIMENTAL RESEARCHES.

Yet another point will at once strike the critical observer. In all these experiments no animal standardisations were performed at all. The investigators proceeded straight to the clinical trial. Starting in 1900, we can trace the observations right up to 1912 before there is any reference to animal tests. We can, in fact, state that all the exact work on the ovarian hormone commenced in this year. The most important observation was performed by Adler.[5] He showed that by repeated injections of crude watery extracts of the whole ovary it was possible to produce the typical signs of œstrus in animals. This careful series of observations was checked by histological investigations of the uterus and vagina, and there can be no doubt that he succeeded in obtaining potent preparations. We can, therefore, begin our serious consideration of the literature on the subject from this point. From 1912 onwards we have before us a series of careful experiments, particularly on the chemical side. The standardisation of the preparation was carried out on animals, and therefore the whole question was put on a much sounder footing. In the experiments about to be quoted, two more or less new aspects will strike the critical observer. In the first place, it will be found that practically all the workers from 1912 onwards began to associate the active principle with the fat-soluble material; that is to say, practically all methods of preparation had, as an essential step, the extraction of the tissues with some volatile organic solvent. In the second place, it will be noted that the workers tacitly assumed that any preparation which would produce sexual activities in animals would also produce menstruation in the human subject. For instance, it is quite obvious from a study of the work of 1912 onwards that the authors were certain that any extract producing œstrus or rutting symptoms in animals would, without doubt, be a potent therapeutic agent in the treatment of ovarian deficiency in the human being. As we proceed we shall have to examine both of these points, and it will be found that the first theory, with regard to the fatty nature of the active principle, is partially correct; whilst the second assumption is one upon which I doubt very much whether it is possible to give a definite opinion at the present time.

Since the method of testing extracts is the most important and, in fact, the only criterion by which it is possible to assess the value of the earlier work, it will perhaps be as well to consider an investigation based on careful animal work. There can, of course, be no doubt that the results of the very early workers who proceeded straight to clinical tests were fallacious and completely lacking in quantitative basis.

Many of the earlier publications dealing with the chemical and physiological properties of the hormone left no clear-cut account of the standardisation. Discounting various observations which we now know to be incorrect, undoubtedly one of the clearest pieces of work was that of Herrmann and Fraenkel,[6] and the following account is taken from the patent specification:—

Finely minced ovaries are extracted several times with some volatile substance—preferably alcohol. By extracting

the previously dried tissues the best results are obtained. The solid matter has to be filtered and pressed in order to separate it from the solution, and the alcohol has to be distilled off. Thus a watery residue is left with the active material present as a suspension. This residue is then shaken up with ether in a separating funnel, and in this way the suspended material is removed from the water. The ether solution is then evaporated down, and acetone is added to precipitate the lipoidal fraction which may be separated either by filtration or by centrifugation.

The active principle is obtained when the clear solution has been evaporated to dryness. The following method purifies it. After precipitation of the lipoids with acetone, the solvent is evaporated off and the residue is dissolved up in alcohol. The addition of an alcoholic solution of lead acetate precipitates fatty acids. The solution is evaporated to dryness after the removal of the excess lead, and is then distilled in the highest possible vacuum. The hormone distils over between 190° and 210° C. The distillate contains in addition some cholesterol esters, and is treated with a small volume of cold alcohol. The hormone readily dissolves and much of the cholesterol compound crystallises out and can be separated by filtration. The alcohol is evaporated off and the oily residue is subjected to a second distillation in high vacuum. Placenta may be used for the preparation of this substance.

Properties.—"A light, viscid oil at normal temperature" is the substance. It may be distilled in a high vacuum at a temperature of about 200° C. These preparations give the reaction for cholesterol, but active material can be obtained almost free from cholesterol. It was found to contain only carbon, hydrogen, and oxygen when analysed, and to give the following percentage composition: C. 81·33 to 81·62; H. 11·32 to 11·49.

Herrmann and Fraenkel indicate what they consider to be a criterion of activity by stating that if the substance is administered subcutaneously to prepuberal rabbits for a prolonged period, the onset of premature puberty is noted. They also state that an extract, to be considered active, must produce rutting symptoms out of rutting time, and if administered over a prolonged period should cause a very great increase in the size of the uterus and appendages. The work of Herrmann and Fraenkel set up certain definite standards for determining the activity of the preparation, and the majority of serious workers adhered to this type of method.

Biological Test of Activity.

It can be seen, however, that it is very difficult to define the activity in a quantitative manner by this type of method; it is only possible to say whether a preparation is active or not. Fortunately the application of some purely biological work has resulted in the gradual replacement of this method by one which now promises to develop into a fairly correct quantitative method. In 1917 Stockard and Papanicolaou[7] noted that the type of cells obtained from a vaginal smear of small mammals was influenced by the appearance of œstrus, and this work was extended to embrace other animals by various workers. The vagina is represented by a solid cord of cells in the pre-puberal rat, appearing in the vulva merely as a slightly raised mark. The opening out of this strand of cells shows the onset of puberty. In the non-œstral rat, smears of the vagina, stained with hæmatoxylin and eosin, show the presence of epithelial cells in various stages of nuclear degeneration and cytoplasmic shrinkage, together with some polymorphonuclear cells. Congestion of the vulva may accompany the onset of œstrus, and the vaginal opening appears larger. The smear shows nucleated epithelial cells alone. The vagina is nearly dry when œstrus is at its height. The smear shows cornified, non-nucleated, red eosin-staining cells. The presence of these cells makes the diagnosis certain, though external signs may be absent. These changes take place in reverse order as the œstrus recedes. These researches provided an accurate means of determining the onset of the sexual cycle in animals, and so could be made the basis for a method of standardising the ovarian preparations.

To Allen and Doisy[8] belongs the credit of first suggesting that the ovarian extracts should be tested by this type of method. They repeated the work of Herrmann and Fraenkel on the chemical side, and applied the Stockard and Papanicolaou smear metho to the study of the activity of the preparations. B this means a very great advance was made.

Thus the potency of ovarian preparations may b measured by two methods. A unit could be base upon the quantity required to produce the typic signs of puberty in a rat long before the age at whic the condition supervenes naturally, or the amoun required to induce œstrus in a castrated anim might form the basis of a method of standardisatio The former method would have certain disadva tages; for instance, the exact date of the birth the animal would have to be known, otherwise would be difficult, even with control animals of th same litter, to avoid the possibility of natural puberty Also, a fresh rat would have to be used for eac experiment, otherwise any positive result occurrin might be said to be due to additive effect. On th other hand, if the second method were employe one animal could be used for any number of tes when the reaction had subsided. The operation double ovariectomy in young rats is quite easy. A incision is made through the back, parallel to th quadratus lumborum, the ovary is seized through th wound and cut off. It is advisable to ligature th pedicle in large rats before closing the incisio Michel's clips are used to close the skin wound. T make certain that the ovaries have been remove sections of the tissues should always be cut. Sexu maturity cannot be achieved by natural means this operation is performed before puberty. "puberal" dose would seem to have to be great than an "œstral" dose. The "œstral" unit h advantages over the "puberal" unit, which ha led to its adoption.

Difficulties of Standardisation.

It can readily be seen that this method has all th possibilities of being capable of developing into really quantitative reaction. A number of anima are ovariectomised and are swabbed daily for o week. During this period the animal should rema in a state of dicœstrus. Any that show cornificatio during this period must, of course, be rejected. Wh a batch of animals is obtained that gives a uniform negative swab over a prolonged period, standardis tions can be performed upon them. It would appe at first sight that one could inject a series of anima with descending doses and thereby obtain a minimu quantity of extract that would give a full œstr response and thus could be defined as a unit. Th method has been used up to August of last year, a it was assumed that the results were perfectly u form. The yields were calculated on the basis of th type of standardisation, and a great deal of elabora work has been done with regard to the distributi of the active principle throughout the body. Unfo tunately, it has been shown that the above procedu is fraught with many difficulties and is, in fact, qui unreliable from a purely quantitative point of vie In the middle of last year Coward and Burn[9] pu lished a paper in which they examined this type method, and the results arrived at by them are important that it is necessary to consider them some detail. As they point out, it is obvious th the method of standardisation depends upon t assumption that the smallest dose of the extra required to produce œstrus in one rat will not serious differ from that required in another. This has be tacitly assumed by all workers, but the investigatio of Coward and Burn prove conclusively that this not the case.

From a prolonged series of investigations they show th the amount of extract required to produce œstrus in a sin rat may vary by as much as 1000 per cent., and from t they conclude that all methods of standardisation bas upon a gradual reduction of the dose in a small series animals must be entirely fallacious. In order to determi the relation between the weight of extract injected and t number of animals giving a full response, Coward and Bu took a preparation of the extract of which 5 mg. wou seem to be a dose that would send the majority of a sm number of animals into œstrus. Ninety rats were tak

ıd were injected with 5 mg. each. The rats were swabbed
the manner already described, and the slides were examined
find out how many were going into œstrus. After the
ıimals had passed their cycle, the experiment was repeated,
ıt in each experiment a different dose of the hormone was
ven. The general conclusions that can be formed from a
udy of this work show that, as the dose of the extract is
creased, the number of rats responding does not increase
roportionally; in fact, the number is smaller than would
ave been expected. One point that is demonstrated very
early is that the minimum effective dose is by no means
ıe same for all rats, and therefore some new criterion has
be obtained in the standardisation of the extract. From
statistical consideration these workers decided to define
rat unit of the extract as that quantity of material which
ould produce the full œstral cycle in 50 per cent. of the
ries of injected animals. They also demonstrated very
early that no conclusive results could be obtained unless
least 20 animals were used.

We have repeated the whole of this work and have
lly confirmed it. The method we now employ is
ıat described—viz., an injection of at least 20
ıimals with a dose that will just give a response in
per cent. of the animals. Coward and Burn
ıowed that the mouse unit is the same as the rat
ıit when tested by this method, thereby pointing
ıt that the amount of extract necessary to produce
e complete cycle bears little or no relation to the
ody-weight of the animal. These authors also stated
ıat the extract was just as active in one dose as it
as when the amount was split up into a series of
jections given over a period of days. As will be
en later, we have found that these statements do
ot apply to the water-soluble form of the hormone.

Oily and Watery Preparations.

The chemical work on the process of preparation
rformed by Allen and Doisy consisted mainly in
e extension of the work of Herrmann and Fraenkel,
th the result that a more potent preparation was
tained. They maintained that an active principle
as located in the liquor folliculi of the ovaries, and
ey elaborated a method for the preparation from
is source. By their later methods they claim to
ve produced a substance of which the rat unit
about one-hundredth of a milligramme, but it must
borne in mind that they have not apparently used
e statistical method elaborated by Coward and
ırn. With regard to the distribution of the hormone,
ntrary to the views of Allen and Doisy and their
-workers, we have found that the residual ovarian
sue, after removal of the liquor folliculi, still con-
ns a considerable quantity of the hormone, and we
me to the conclusion that the active principle
s distributed throughout the ovaries. This has
o been demonstrated by Parkes and Bellerby.[10]
r the preparation on a large scale the majority of
rkers use the placenta, and as the human organ is
far the most easily obtained in London, this has
en used more or less exclusively.

Up to the present we have only referred to the
paration of the hormone in the oily form. This
e of preparation has to be put up for injection
her dissolved in oil or emulsified in sodium bicar-
nate solution, but this has been found far from
table for a hypodermic injection. The material
ulting from the ordinary process of alcohol extrac-
n has a unit as defined by Coward and Burn of
ne 8 to 10 mg. It follows, therefore, that if a large
se is to be given, the same weight of the extract
very considerable, and as this consists of a stiff
a local reaction usually results. By repeated
ifications it is possible to obtain material of an
ivity between 1 and 2 mg. per unit, but even this
s not give by any means an ideal solution for
ections. Up to the present we have been unable
obtain oily material with an activity of below
ng. It can readily be seen that the very nature of
substance tends to inhibit its clinical use. Many
estigators have endeavoured to prepare the active
ostance in a form soluble in water.

The literature on this problem is so extensive that
letailed review cannot be given. I will therefore
rely mention one or two investigations.

Zondek and Aschheim[11] state that they could produce the hormone in a water-soluble form by boiling the oily material with acetic acid. Up to the present we have not succeeded in obtaining active material in this manner. Laqueur[12] and his co-workers in Amsterdam have published a very long series of papers in which they state that they have successfully elaborated a method for the preparation of the hormone in a water-soluble form. Again, the methods elaborated by Prof. Laqueur have not been very successful in our hands, but he has sent me material of high activity prepared by himself. At the Middlesex Hospital we have been working for some years now on this problem of preparing the ovarian hormone in a water-soluble form. Last year a method was elaborated by which the active principle was extracted from the placenta as a picrate which was subsequently converted to hydrochloride. This work[13] was published prior to Coward and Burn's observations on the standardisation, and a repetition of our work proved that the yields were very unsatisfactory and, in fact, that the method was unsuitable for general work.

A prolonged series of experiments with my colleagues, Dickens, Allan, and Howitt, showed that the hormone would resist boiling with baryta, and that from the baryta digest of the placenta the hormone could be recovered in a water-soluble form. The actual method of procedure is somewhat involved, and will only be dealt with in a very brief manner here.

The placenta is hydrolysed with baryta for a period of two hours by boiling in a flask fitted with a reflex condenser, and after allowing it to cool it is found that a precipitate has settled out and that a clear supernatant fluid is left. This is decanted and extracted with butyl alcohol. The extraction is performed fairly thoroughly in a shaker for a period of some hours. On allowing it to stand the emulsion separates immediately and the butyl alcohol is syphoned off. On evaporation a sticky residue is obtained which contains a part of the fats and soaps of the original placenta together with the hormone, but it is contaminated with large quantities of protein derivatives, such as peptones. The sticky material is dissolved up in water and the resultant solution is again extracted with ether in a separating funnel. The ethereal layer also separates quite readily on standing and is syphoned off and evaporated to dryness. This process completely removes the protein derivatives. A certain amount of nitrogen is still found in the material, but it has been found that this can be largely removed by shaking the ethereal solution with hydrochloric acid. The residue from the ethereal solution is heated with a small quantity of baryta in order to render the saponification complete. The precipitate of the barium soaps is filtered off; the excess of barium in the filtrate is precipitated by the addition of dilute sulphuric acid. The final solution is water-clear and possesses the property of producing œstrus in very high dilutions. Full details will be published later.

As will be gathered, this process has been elaborated as the result of a long series of experiments. Each stage has had to be checked by standardisation. A very curious, and at the same time misleading, phenomenon was encountered in the early stages of this work; it was found that a considerable yield of crude water-soluble material was obtained after the first baryta digestion; that is to say, this material, when freed from excess barium and injected into rats in one dose, was found to give a full œstral response, and could be standardised in the manner described by Coward and Burn. When, however, this material was subjected to a series of processes which, one had every reason to believe would lead to purification, it was found that the potency had diminished. We concluded that our methods of treatment had destroyed the active principle or reduced its potency, but, again, a long series of exhaustive experiments proved that this was not the case. It was found that the falling off of the potency was due to the fact that the material, when injected in one dose, was inactive, but when the same quantity was given in a series of injections spread over three days a full œstral cycle was induced.

A typical experiment on these lines is as follows:—

A preparation was given to 20 rats in single doses of 0·7 mg., and it was found that none of the animals went

into œstrus. According to the scheme which we have already outlined, this preparation was recorded as being completely inactive. When, however, another batch of 50 animals was injected morning and evening for three days with 0·026 mg. in all, a full œstral response was obtained in 25 of the animals, thus giving the correct percentage for the calculation of a unit. This remarkable result can only be explained by assuming that the active principle in this relatively pure water-soluble form is rapidly excreted, and that it is necessary to give a small number of injections in order to obtain the full response. This type of experiment has been performed so many times in my department that it leaves us in no doubt that the statement of Coward and Burn concerning the equality of effect of a single or multiple dose is wrong. It must, of course, be borne in mind that these observations were made entirely with a relatively crude oily material, the weight of the unit being somewhere about 10 mg. This material is absorbed slowly and will, therefore, imitate the effect of splitting up the dose. The weight of the unit of our material is somewhere about 0·02 mg., and a yield of some 150 to 200 units per kg. of placenta is constantly obtained. The preparation is without action on the blood pressure and does not give rise to local reactions when injected into animals. In fact, large doses seem to produce no ill-effects. It would appear, therefore, that this material is eminently suited to clinical investigations, and we are at present engaged in collecting a large stock of this preparation for clinical trial.

The Termination of Pregnancy.

Before leaving the purely experimental side of this question, there is one other very important pharmacological action of the extract, and that is its ability to terminate pregnancy in animals. This important action has been studied by Smith[14] in America, and by Parkes and Bellerby in this country. All these workers have proved that the injection of a fairly large number of units will cause abortion in laboratory animals. It is hardly worth while to consider the number of units required to produce this action, as this work was done prior to the publication of Coward and Burn's paper. We ourselves have repeated these observations and found that our own material will terminate pregnancy. My colleague, Dr. Allan, is at the moment trying to induce premature labour in laboratory animals by means of small graduated doses of the extract. By this means it is hoped to terminate the pregnancy and produce living offspring. If this problem could be worked out quantitatively there can be no doubt that its application to clinical medicine would prove of great value.

To summarise briefly the position of our knowledge of the ovarian hormone, we can say that we have a preparation that will produce œstrus in animals, and which can now be obtained in a form suitable for clinical investigation. The material will also produce abortion in animals.

Clinical Applications.

To many of us the clinical application of this substance is really the most important aspect of the whole problem. What clinical result do we hope to achieve by the use of this preparation? I suppose that one of the most useful outcomes of the work would be to start menstruation in women in whom this function was absent. The question arises as to whether we are justified in assuming that an extract capable of producing œstrus in an animal will produce menstruation in a woman. This immediately pitchforks us into one of the most difficult problems in biology—viz., to what does menstruation correspond in the lower animals? This, of course, is practically an unanswerable problem, there being so many theories supported by so much conflicting experimental evidence that it is not a subject for a biochemist to plunge into and give a brief summary of at the end of what has been meant to be mainly a chemical lecture. I will, however, attempt to summarise very briefly one or two of the existing theories. We must consider the various cycles that are going on in female animals. In the lower animals we have the œstral cycle, which we have described at some length, and we have, in addition, the ovulation cycle in which the ovary is discharging ova at certain definite intervals. In addition to this we have also the corpus luteum cycle, which is very short if pregnancy does not supervene. According to most observers, ovulation occurs in the majority of animals at some time during œstrus—that is to say, the rupture of the follicle, together with discharge of the ovum, takes place during each œstral cycle. Now in the case of the higher primates we have the same number of cycles, but in place of the œstral cycle we have, in addition, the menstrual cycle. To what does the periodic bleeding from the uterus correspond? And what relation does it bear to ovulation? The latter problem has in part been answered by the researches of Corner.[15] A careful study of the reproductive tract of monkeys revealed the degeneration ovum in the uterus which was in the later stages of the menstrual cycle. From this it would appear that ovulation occurs some time before menstruation. Now, since ovulation occurs in the lower animals during œstrus, it might be concluded that menstruation corresponds to œstrus, or in any case that the pre-menstrual period bore some relation to the post-œstral stage of other mammals. This, of course, is by no means a definitely established fact. According to Fraenkel,[16] menstruation is due entirely to the retrogression of the corpus luteum, and his work showed that when the uterine mucosa broke down he could always find degeneration of the corpus luteum in the ovary. He therefore regarded menstruation as a pathological process due to the destruction of the corpus luteum through pregnancy not supervening. As Corner puts it, "menstruation therefore (though by no means an abortion of the unfertilised ovum, as it is sometimes put) is merely a violent demolition of the pre-menstrual uterine edifice some days after the expected tenant fails to arrive." We can see, therefore, that the position may be summarised as follows.

Menstruation may correspond *(a)* to pro-œstrus, *(b)* to œstrus itself; *(c)* it may be a pathologic process according to Fraenkel; *(d)* it may have no relation whatever to ovulation. If we are to accept the teachings of Fraenkel, then we must conclude that menstruation bears only a very distant relationship to œstrus in the lower animals. We must, therefore, not be disappointed if we cannot produce menstruation with our œstrus-producing hormone. Many workers have, however, reported positive results. The difficulties with regard to local reactions when oily material is injected have already been pointed out. In any case it is impossible to consider the question from a quantitative point of view. Some workers have reported that menstruation could be induced in amenorrhœa by the injection of 1 or 2 rat units, whereas others state that 6000 units must be given to produce effect. It is obvious, therefore, that we should gain nothing by a consideration of this literature.

Conclusion.

In conclusion, we can say that the work of biologists, physiologists, and biochemists has handed to clinical medicine a preparation which is highly potent in animals. It will produce œstrus, cause growth enlargement of the genital tract, induce precocious puberty, and will cause abortion and possibly premature labour. It remains to be seen what this new substance will do in the clinic. Unfortunately, we cannot regard the clinical literature of the past as being of much value, and before any person experiments with the material on women patients he should be certain that the material has been carefully standardised on animals. The important point to remember is that we are just about to begin the clinical investigation of the ovarian hormone, and that we are not, as certain commercial publications would have us believe, just putting the finishing touches to a completed field.

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(*Continued at foot of next page.*)

ON TWO APPARENT RECOVERIES FROM ANÆSTHETIC LEPROSY FOLLOWING PROTEIN SHOCK TREATMENT.

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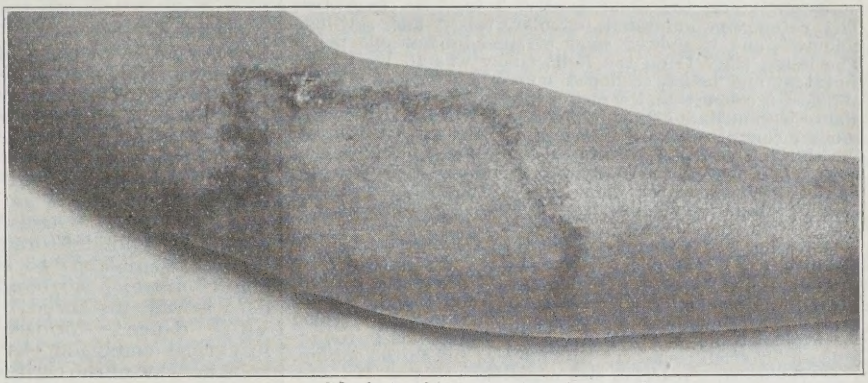
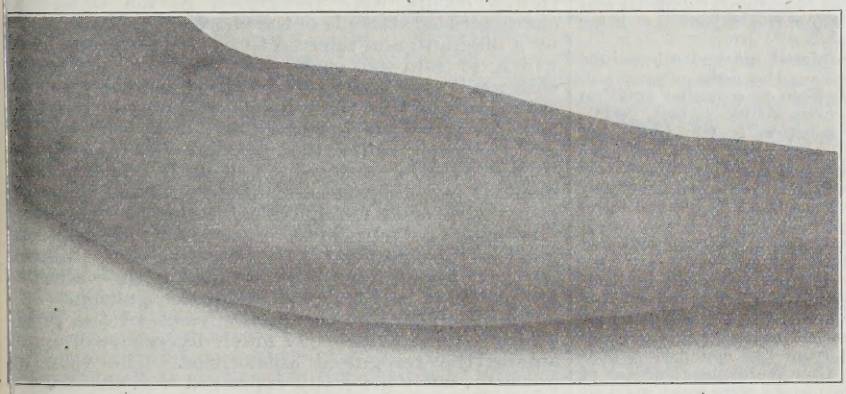
VERY striking improvements and remissions from all active leprous symptoms have been reported from time to time as a result of treatment with a variety of agents. Many successes from the injection of ethyl esters of chaulmoogra have been reported by Rogers and Muir.[1] These reports seem to justify the surmise that the agents which cause the most profound constitutional disturbances produce the best results on the more active symptoms of the disease. Somewhat similar results in nodular leprosy appear to have been obtained by the intramuscular or subcutaneous injection of irritating substances, such as turpentine, into the lesions; these are substances which primarily bring about severe local reactions. The intravenous injection of proteins, producing a generalised systemic reaction, was apparently first employed for leprosy by Hasson,[2] who reported successful and almost instantaneous results with intravenous injections of a vaccine consisting of 15,000 million killed *B. pyocyaneus* and 5000 million leprosy bacilli. The reactions caused by these injections appeared to be those of a severe "protein shock." In 1926 he reported a case of acute nodular leprosy originating in an oriental student who had been treated by this method with great and apparently lasting benefit; this improvement appears to have been maintained for over 18 months. Dr. N. A. Dyce Sharp,[3] from the Cameroons, has been able to record almost as favourable results from the intravenous injection of sterilised preserved milk—0·5 c.cm. in 5 c.cm. of water. A protein shock with severe reaction ensued and lasted several nights. There could be no doubt of the benefit to the patient. Relief from pain in joints and bones was obtained within 24 hours; perforating ulcers of the soles of the feet became painless and healed up in three or four days. The results were ascribable to the general tissue reaction consequent upon protein shock.

FIG. 1 (Case 2).



The lesion before treatment.

FIG. 2 (Case 2).



The arm, showing disappearance of the lesion after treatment.

In reporting the following cases of anæsthetic leprosy I wish to avoid using the word "cure" for what is, after all, an arrest of the tissue-destroying process. I do not claim that all the leprosy bacilli in the body have been destroyed. It is manifestly impossible to do this. In leprosy, above all diseases, it is extremely difficult to be sure that the favourable changes observed are permanent until a good many years have elapsed.

CASE 1.—An Eastern student; was first seen by me in October, 1925. He had lived in England two years and had been studying in London. In the middle of May, 1925, he found, quite by chance, a small discoloured whitish patch on his right knee. At first it was thought to be leucoderma, but subsequently it was found to be anæsthetic. The Wassermann reaction was negative. On careful examination there could be little doubt that this patch was one of anæsthetic leprosy. The margin was raised and slightly nodular, and was of a peculiar purplish colour. The macular patch measured exactly 3½ by 2½ cm, and in the centre was completely anæsthetic to pain and heat.

On Nov. 28th, 1925, a blister was raised by the application of Hasson's carbonic snow method, and in the centrifuged abstracted blister fluid it was possible to demonstrate numerous *B. leprœ*, thus clinching the diagnosis. On the same day treatment by intravenous injection of Hasson's vaccine was commenced. The result was to produce within an hour violent symptoms of protein shock. In all, six intravenous injections of vaccine were given within one week of each other, varying from ½ c.cm. to 1 c.cm. There was nothing in the subsequent reaction to distinguish it from ordinary protein shock. On June 19th, 1926, I found

PROF. E. C. DODDS: OVARIAN HORMONE.

(References continued from previous page.)

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that the area of anæsthesia had considerably diminished, and by August of that year he was able to feel light touch and heat over the whole of the previously anæsthetic area.

By Dec. 10th, 1926, all signs of leprotic infiltration at the margin had disappeared, leaving only a slight discoloured patch to mark the site of the former lesion. The patient was in good health and condition and had put on weight. The hairs were sprouting over the previously depilated area, and it certainly looked as if the leprous process had been arrested. The progress has since been maintained. He received no other form of treatment whatsoever.

CASE 2.—Also an Eastern student; after two years' residence in England developed anæsthetic leprosy of both arms. The history he gave was that, in May, 1926, a small red spot appeared on the flexor aspect of the left wrist and in June of that year a similar patch appeared on the right elbow. On both patches there was complete anæsthesia to pain and heat. The lesion on the left wrist was about 5 cm. in diameter, on the ulnar border, 2 in. from the wrist. The patch was indurated, circular, raised and raw-ham coloured, and it showed signs of spreading at one point. The lesion (Fig. 1) on the right elbow was 16 by 12 cm. in extent and had a scolloped border and raised margins of a deeper colour than the rest of the lesion. It showed faint nodosities and indurations along the border. Both lesions showed complete anæsthesia, loss of hair, and atrophy of the skin. There was definite thickening and induration of both ulnar nerves, especially the right, and this, together with anæsthesia of the ulnar side of the right hand and definite wasting of the interossei muscles, left no reasonable doubt of the diagnosis.

Unfortunately it was not possible to demonstrate leprosy bacilli either in the nasal mucus, in the blister fluid from the lesion, or in section of the skin taken from the margin. This, however, is by no means exceptional and did not invalidate the clinical diagnosis. Skin sections revealed the typical tissue changes of leprotic infiltration; round-celled infiltration round the hair follicles and in the corium. The Wassermann reaction was negative.

From the experience gained in the first case and from what appeared to be the direct effects of non-specific protein shock therapy, it was decided to administer "protein shock" by intravenous injections of T.A.B. (typhoid and paratyphoid vaccine) instead of by Hasson's specific vaccine. On Oct. 1st, 1926, treatment began with intravenous injection of 50 million T.A.B. The dose was gradually ncreased at weekly intervals up to 200 million organisms. As a rule the onset of the shock was considerably delayed and occurred from 4 to 12 hours after the injection. Four injections in all were given.

Soon after the course was completed marked alterations appeared in the anæsthetic patch on the right elbow, and since that time improvement has been progressive until no signs of the former lesions are now visible (April, 1928). Not only has the peculiar discoloration of the indurated skin completely disappeared, but sensibility of the affected area has entirely returned. There is no longer any anæsthesia of the right hand. The right arm (Fig. 2) is more muscularly developed and is actually larger than the left. There is no feebleness of grasp and the interossei are well developed. The hairs have grown on the anæsthetic patches and the skin looks perfectly normal. Both ulnar nerves are still thickened, but nerve sensibility is now produced in both arms by direct pressure on the nerve itself. The remarkable disappearance of all obvious lesions of the disease can best be judged from the illustrations. If more complete proof is necessary, it can be obtained from the coloured photograph taken and exhibited by the Wellcome Bureau of Scientific Research at the time the lesions were most marked and the patient was first seen. It would now be extremely difficult for anyone (one and a half year later) to ascertain whether the patient had ever suffered from leprotic symptoms. The nasal mucus remained free from leprosy bacilli during the whole period of observation.

As has been said, no attempt is being made to affirm that the patient is definitely "cured," but we can safely say that the disease process has been so arrested as to enable him to mix freely with his fellows.

I submit that these two examples of apparent recovery from leprosy are sufficiently striking to warrant record, and that the improvement in the patients' general condition and the restoration of the destroyed leprotic tissue and the return of sensibility are too apparent to be merely accidental. It is possible that beneficial results may not be obtained in every case of anæsthetic leprosy, but in early lesions protein shock treatment is certainly worth a trial.

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THE DIFFERENTIATION OF HYPERKINESIS IN CHILDREN.

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CERTAIN aspects of hyperkinesis in children, suc as the nature of the neural disturbance in chorea an athetosis, have received the full degree of attentio which the importance and obscurity of the subjec might be expected to attract, and which is evidence by numerous and voluminous contributions to th literature of neurology and pædiatrics. In strikin contrast to this is the scanty attention which ha been devoted to the exact differential diagnosis, b clinical methods, of the various forms of hyperkinesi This problem has rarely been subjected to critica analysis as a whole; it is customary to find in on place a short discussion on the differences betwee habit-spasm and chorea, and in another betwee Sydenham's chorea and hysteria. The existence symptomatic chorea as a manifestation of cerebr disease is well recognised, but little prominence given to the possible difficulty which may be presente by its resemblance to the rheumatic variety. Th confusion which surrounded the subject from an earl date is well instanced by the use of the term "S Vitus' dance"—formerly descriptive of a pure hysterical condition—as a synonym of Sydenham chorea. One of the earliest attempts to place the stud of hyperkinesis on a scientific basis is found in D Francis Warner's lectures on the Anatomy of Mov ment [12] (1887), in which the view was first pr pounded that chorea was "a reversion to the infanti ratio of functions." The degree of classificatio accomplished by Warner was comparatively sma since but few of the conditions in which symptomat chorea occurs were recognised in his time. Th characteristic attitude of the choreic hand is illustrate by a diagram, and referred to as "the nervous hand which is said to occur in "nervous and chore children." Nevertheless to Warner belongs the cred of recognising that the subject could only be freed fro the obscurity which surrounded it by the adoptio of a strictly objective method of investigatio "Describing facts as we see them, in terms of mov ment, is probably the best mode of attempting to away with such metaphysical terms as 'voluntar 'intelligent,' 'purposive,' in scientific descriptions Much of the confusion in the literature of the followi 20 years might have been avoided if the validity this attitude had received earlier recognition.

The literature of the earlier years of the prese century shows evidence of much divergence of opini among the recognised authorities. The view w however, fairly generally expressed that the diagno of chorea was an easy one, and that, if chorea was t result of a cerebral lesion, evidence of this lesi would always be present. The prognosis of cereb lesions in children was then regarded with extre pessimism, and the remarkable degree of recove which is so often obtained in them does not appear have been anticipated. James Taylor,[13] howev explicitly recognises a type of case to which attenti is drawn in this paper, though he expresses no vie on the differential diagnosis. "Just as a condition f choreiform hemiparesis may develop upon the clearing up of an initial hemiplegia, so may a condition f generally distributed hemiathetosis develop in te absence of any great degree of paralysis or rigidity." Leonard Guthrie [10] (1907) states that the moveme s which follow infantile hemiplegia bear no resemblance to those of rheumatic chorea. He was among te first to draw attention to an important point in te differentiation of movements—i.e., the persistence f hyperkinesis after recovery from Sydenham's chor "though the child is in perfect health and can inhi t the movements by an effort of will. The chorea s

cured, but the symptoms still remain." For this state of affairs he proposed the term "residual chorea," but made no suggestions as to its exact nature. In Pfaundler and Schlossmann's Handbuch für Kinderheilkunde[14] (1908) Thiemich paid some attention to the differentiation of movements. The occurrence of chorea *instead of* muscular rigidity, as a result of "intra- and extra-uterine organic disease of the brain," is emphasised; it is stated that the primary disease is at once revealed by a systematic examination. He regards movements of a non-choreic type as more likely to present difficulty in diagnosis; "the muscular unrest and twitching movements indulged in by neuropathic children are more apt to be confounded with chorea minor, and this mistake is not uncommon in general medical practice." In a later edition of this work (1924) T. Gött describes the diagnosis of chorea as easy. He bases the distinction between true chorea and the "choreatic restlessness" of anxious and shy children on the hypotonus which accompanies the former. Bechterew,[17] writing in 1911, subscribes to the current opinion, and says that the diagnosis of chorea presents no difficulty. In the most comprehensive work which has been written on the nervous disorders of childhood, that of Bruns, Cramer, and Ziehen,[15] the differential diagnosis of Sydenham's chorea from other forms of chorea is almost entirely ignored; the persistence of movement after subsidence of the disease is mentioned. These authors regard the diagnosis between chorea and hysteria as difficult; the two signs upon which they place the most reliance are the hypotonus present in chorea and the diminution of movement in hysterical cases when the attention is diverted. Georg Peritz[16] (1912), though he summarised the diagnosis of chorea as comparatively easy, drew attention to the existence of difficulty in a proportion of cases. He considered that the movements observed in infantile cerebral palsies were indistinguishable from those of Sydenham's chorea. The diagnosis was to be established mainly by the age of onset, the movements of cerebral palsies being usually congenital or coming on during the first year; the accompanying signs of pyramidal involvement would also make the case clear. Nevertheless he admitted that some cases would only be made obvious by observing the course of the disease over a prolonged period. In Garrod, Batten, and Thursfield's Diseases of Children[18] (1913) Voelker states that the diagnosis of chorea rarely presents any difficulty, except in the paralytic form which may simulate a hemiplegia. He adds that "the movements of chorea are sometimes roughly simulated by those of hysteria, but the latter are without that incoördinate and unpurposive character seen in chorea." Batten, in the chapter on cerebral diplegia, describes an athetoid group, a choreic group, and a "perverse movement" group; in the latter group there is, as a rule, a good deal of alteration in the mental condition. He states that "the cases with choreic and perverse movements are, when first seen, difficult to distinguish from ordinary rheumatic chorea, and it is only by noting the persistence of the movements associated with the mental defect that a correct diagnosis can be made."

During the years immediately following the war the occurrence of symptomatic chorea in epidemic encephalitis was recorded by numerous observers in various countries, and rendered the exact diagnosis a matter of much greater urgency and importance. Prof. A. J. Hall[19] described the movements in one of his cases as being indistinguishable from those of Sydenham's chorea. He also drew attention to the close resemblance between the pathology of encephalitis and that of the fatal case of chorea described by Greenfield and Wolfsohn.[20] In recent years the incidence of acute encephalitis has fallen in proportion to that of the more insidious types, but the occurrence of chorea as an early and as a late symptom is universally recognised. There is evidence of a certain tendency not only to utilise the association with extrapyramidal syndromes for the purpose of drawing conclusions on the pathology of chorea, but to extend the speculation to other forms of movement. Bing,[21] on the ground of a supposed frequency of tics and similar movements among Parkinsonian patients, has been led to believe that many so-called "functional" forms of hyperkinesis are the result of disturbed function in the basal ganglia, for which he suggested the term "anisosthénie extrapyramidale passagère."

Reference is made later to the contributions to the literature made by Wall and Kinnier Wilson, as representative of current opinion at the present date.

Fidgetiness.

One of the most frequent causes of the temporary removal of a child from school is "fidgetiness." A large number of children exhibiting this symptom are sent to hospital for advice or treatment, very commonly with the history that the school doctor or the teacher said that the child had St. Vitus' dance. A reason for this, and an entirely legitimate one, is afforded by the widespread recognition of the fact that an early removal from school of all cases of true Sydenham's chorea is of the greatest importance in checking the course of the disease. In this form of hyperkinesis psycho-motor activities are in excess, and all sources of mental and physical stimulation should be diminished until the inflammatory condition in the cerebrum has subsided. Hence it has come to be regarded as a policy of safety to remove a child from school if it is fidgety.

In contrast with the degree of attention which has been accorded to chorea, other forms of hyperkinesis have received comparatively little serious investigation, especially when they occur in children who are sufficiently well to attend school and lead a normal life. A child who exhibits any fairly widespread hyperkinesis is likely to be diagnosed somewhat uncritically as chorea, and the assumption usually follows that the case is one of true Sydenham's or rheumatic chorea. It is no rare event to find that a patient of this kind has been put to bed for six weeks, in strict isolation, and that at the end of this period the fidgetiness is considerably increased, while the mental state gives evidence of the harmful effect of enforced inactivity on a child. Again, it is no rare event to meet with a child in whom the diagnosis of chorea has been made at frequent intervals over a considerable number of years, perhaps at every periodic school inspection, while the mother states that he has been more or less fidgety all his life. If a child of this type is not suffering from Sydenham's chorea the line of treatment indicated will usually be the direct opposite to that of chorea; it will consist in providing constant occupation and attempting to replace the "involuntary" and inappropriate movements by activities—motor and inhibitory—which are directed towards an end.

It appeared, therefore, that an attempt to differentiate as closely as possible the various types of hyperkinesis met with in children was desirable on practical grounds as well as those of academic interest, and for this reason all children brought to hospital for "fidgetiness," or in whose case any suggestion of chorea had been made by school or other authorities, were observed by the writer during a period of about 18 months.

The existing terminology is not favourable to the elucidation of the neural mechanism of hyperkinesis. In the first place, comparatively little attention has been paid to the non-choreic forms, their pathogenesis being obscured by the confusion inherent in the expressions "organic" and "functional." Secondly, the word chorea carries a double significance, well recognised in the literature, but not always borne in mind by the practitioner. This was clearly indicated by Wall[1] in his Bradshaw lecture: "chorea is a symptom resulting from disordered function rather than a single disease," whereas "we are justified in speaking of 'rheumatic chorea' as a disease." This attitude has probably never been challenged, and has subsequently received additional justification from the frequent occurrence of symptomatic chorea in children suffering from encephalitis. Nevertheless, one finds little evidence of it in medical teaching and practice, and, in the writer's opinion, failure to distinguish between

the symptom and the disease-entity has been a cause of much error in the diagnosis and treatment of hyperkinesis. The words "purposive" and "purposeless" have little objective significance, and tend to confuse rather than to clarify the differentiation of movements. Some of the difficulties inherent in the terms "voluntary" and "involuntary" have been pointed out by Kinnier Wilson,[2] who has shown that they merely express varying degrees of automaticity. They are especially inadequate for description of the movements now under examination, for a further reason. If subjective factors are taken into consideration it will be obvious that in many of these children the movements are not only "involuntary" in the sense of being automatic; they are "contra-voluntary," entirely beyond the control of volitional inhibition, and an evident source of distress to the child.

If these cases are considered from the standpoint of the neural mechanism underlying them they will be found to fall into two principal types: (1) Those in whom the superfluous movements are reproductions of movements which are normally carried out by the child under certain circumstances, and which (though it is certainly true that many of them have become to some extent automatic) have been developed by volition, or as reflex responses of the type which yield evidence of cortical influence. They are produced by *normal* motor activities, the abnormality being in their occurrence or frequency. (2) Those in whom the movements are atypical in character, or are reproductions, usually more or less distorted, of movements of emotional expression. These two types of movement exemplify, or rather caricature, the normal motor activity of the child and the infant. Nothing in any way resembling infantile movement will be seen in children of the first type, while those of the second type often appear to differ from it in degree rather than in kind. Location of cases of hyperkinesis into one of these two groups, as a preliminary measure, has many advantages over the use of a classification involving subjective factors, and can usually be accomplished without great difficulty by clinical observation. A striking difference may be noticed in the sex-incidence of these two groups. The first, in conformity with almost all types of nervous disorder in childhood, shows a marked preponderance of males (about 80 per cent. in the writer's experience). In the second group a large majority of girls will usually be found, owing to the high incidence of Sydenham's chorea in female children as compared with male.

TYPE I.—*Movements which are Reproductions of Normal Cortical Movements.*

These vary greatly in their situation and extent; the more simple ones yield fairly obvious evidence of their origin, and throw light on that of the others. They include cases described under a variety of names; when the movements are diffuse, extensive, varying from moment to moment, the child will merely be described as restless or fidgety, or, as frequently happens, be erroneously considered to be suffering from St. Vitus' dance. When the movements are circumscribed, single or few in number, and have become stereotyped by habit, they correspond to the types to which the terms tic and habit-spasm have been more or less indifferently applied. There is, however, no fundamental distinction between them, and their mode of origin is identical. They are reproductions of movements which have been evoked as a response (whether purely reflex or to some extent voluntary is immaterial) to some stimulus, and they have persisted in the absence of the stimulus. They are, in fact, of the nature of conditioned reflexes; their mode of origin was a purely physiological process, but the inhibitory processes which should have extinguished them were in default. Obvious examples will be found in the more simple "tics," as when a facial contortion, throwing back the head, wriggling the shoulders, or any other compound movement is repeatedly performed. In some the original stimulus is easy to determine, and takes the form of irritation from a collar-stud or ill-fitting garment; the unconditioned reflex was a defensive one. Equally obvious are the grunting movements which may persist after some irritation in the throat has been present. The restless or fidgety child who fiddles with objects or picks his clothes merely exemplifies similar processes which are manifested in greater number but to a lesser degree. He is constantly repeating movements which have on past occasions been directed towards an end, but whose repetition is now superfluous and inappropriate.

In normal circumstances conditioned reflexes are extinguished at some period after cessation of the conditioned stimulus, or are suppressed by the inhibitory effects of subsequent afferent impulses, superfluous pattern-reactions thus becoming eliminated. In hyperkinesis of this type the inhibitory influences are defective. The experimental work of Pavlov in animals has shown that the formation and disruption of conditioned reflexes is a function of the frontal lobes, and we may regard children who show these movements as individuals in whom the function of the frontal lobes is below the optimum. Krasnogorski,[3 4] in his research on conditioned reflexes in children, observed characteristic differences in the formation and subsequent disruption of these reflexes in various psychopathic types, such as epileptic, subthyroid, and spasmophilic. Movements of this kind are found to some extent in children who show no other abnormality, but they are especially common and persistent in those who give evidence of psychopathic heredity, or of the spasmophilic type of rickets. The general rule that a disturbance of nervous function in a child is of slight or serious import according to the age is particularly applicable to this form of neurosis. In children under six it may be regarded as a small and often transitory divergence from the normal, which will right itself if attention is directed to the occupations of the child. In children over ten years of age general fidgetiness in itself is almost always a sign of defective mental adjustment, and is of unfavourable prognostic significance, while systematised tics are usually associated with some of the other disturbances of habit-formation which compose the clinical picture of psychasthenia.

TYPE II.—*Movements which are Atypical in Character*

Movements usually classed as choreiform are the commonest of this type; others, such as athetosis and "spasmus mobilis," will be included. It has frequently been stated that each individual movement in chorea is a typical voluntary movement. This may be true, yet the total movement viewed in continuity is an entirely atypical performance. The essential difference between normal muscular activity and choreiform movement has been indicated by Kinnier Wilson,[2] who pointed out that Sherrington's law of reciprocal innervation no longer holds in the latter.

The exact situation of the neural disturbance which occasions this modification of motor activity still remains somewhat obscure, and it is sufficient here to refer briefly to some of the views most commonly held on this question. By analogy from certain chronic degenerative conditions such as Huntington's chorea and some types of choreo-athetosis, "athetosis double," &c., in which the lesions have been found to involve the basal ganglia to a greater extent than other parts (Levy,[5] the Vogts, and others) the situation in choreiform states has been conventionally located in these ganglia or their immediate connexions. One frequently expressed view is that choreiform movement is the result of "release" of extra-pyramidal neurones from the influence of the cortex, a reversion to the more primitive mechanisms of the infant. While this view does undoubtedly receive support from the resemblance between choreiform and infantile movements, its acceptance is rendered difficult by the cogency of the arguments submitted by Kinnier Wilson in favour of the relative integrity of cortico-spinal neurones in chorea. The balance of evidence seems to be in favour of his suggestion that cortico-spinal activity is unimpaired in as far as the hyperkinesis is concerned (in "paralytic" chorea it may also be affected), but is "released" from the influence

of afferent impulses from the basal ganglia and cerebellum. The changes found in the afferent cerebello-thalamic fibres by Bonhöffer [6] in some cases of "athetose double" lend support to this explanation.

Symptomatic chorea is met with in a variety of conditions apart from the rheumatic one. It occurs sometimes as an initial symptom, but more often as an early sequela, of epidemic encephalitis. It is often present, in association with other signs of neuronic disease, in a number of cases falling into ill-defined groups which are roughly classed as choreo-athetosis or "athetose double." In general, children of the latter types show athetoid as well as choreic movement, but it is commonly found that one form is replaced by the other after an interval of time. In a certain percentage of these cases the evidence of some cerebral lesion is unequivocal; there may be obvious spasm with reflex indication of pyramidal defect, as in many cases of double athetosis, or there may be some rigidity of muscles in a limb not affected by hyperkinesis, as in post-encephalitic syndromes. The existence of cases of this kind is well recognised, and the distinction between them and Sydenham's chorea presents no difficulty. A point with which the writer has been particularly impressed, both from personal observation and from study of published cases, is that in a large number of them the hyperkinesis is discontinuous and recurrent, and is not a constant concomitant of the spastic state. Temporary cessation of, or apparent recovery from, "chorea" is no valid reason for regarding the case as rheumatic.

The relative predominance of chorea and muscular spasm in cases of this kind is very variable. In many of them chorea is the only obvious symptom, the pyramidal tract having been but slightly affected, or having made a fair degree of recovery; nevertheless a careful examination of the nervous system will show that a residual pyramidal lesion exists. A child of this type (Cases 7, 8, 9, and 10) is liable to a diagnosis of "chorea" in which the symptom has not been sufficiently distinguished from the disease, and consequently to a course of extremely inappropriate treatment. If one of these children is observed over a number of years, it is usually found that the function of the pyramidal tract tends towards recovery; should the evidence of the residual lesion disappear altogether, the patient will merely present the clinical picture of symptomatic chorea. Cases of this kind, together with a number who may never have shown evidence of pyramidal defect, compose the type of chronic or recurrent chorea to which attention is especially drawn in this paper, with the suggestion that it may be more common than is usually supposed. In the majority of these children the hyperkinesis appears to have been first noticed in the second or third year. The resemblance which it bears to normal infantile movement is likely to prevent its recognition at an earlier age. In a certain number of them, however, some evidence of retarded development of motor functions will be obtained; when present this is of considerable diagnostic importance.

The cases recorded form links of a chain leading from obvious cerebral lesions, associated with chorea, to cases of pure symptomatic chorea, and indicate the existence of a class of choreas due to residual cerebral lesions. The pathogenesis of these cases is obscure, and is susceptible of the same variety of interpretation as that of cerebral diplegia, over which so much recent controversy has arisen. The work of P. Schwartz [7] has led many, who were inclined to attribute the cause of cerebral diplegia to prenatal factors, to the conclusion that the majority are the result of intracranial hæmorrhage during birth. The evidence which he brought forward is mainly drawn from autopsies on infants who were stillborn or who died shortly after birth; its application to infants who have survived is by inference, their symptoms being reasonably explained as the results of similar but less extensive lesions. According to Schwartz, the hæmorrhage by which these lesions are occasioned is not meningeal but intracerebral. It frequently takes the form of bilateral petechial hæmorrhages in tributaries of the vein of Galen, around which necrotic areas in the white matter subsequently develop. A common situation of the hæmorrhage was the vena terminalis; as a result of hæmorrhage from this vein necrotic areas were found in the basal ganglia, particularly in the head of the caudate nucleus. In many of the brains examined it was found that both types of lesion existed simultaneously. A number of pediatrists have attributed the cortico-spinal lesions in Little's disease to small hæmorrhages of this kind in the white matter. The lesions which would result from petechial hæmorrhages in the basal ganglia arising from the vena terminalis appear to offer an equally reasonable explanation of the incidence of some, at any rate, of the cases of residual hyperkinesis. The common, but inconstant, association of slight pyramidal lesions with hyperkinesis would be well explained by an ætiology of this kind.

Differential Diagnosis.

It is not possible in every case of symptomatic chorea to determine the exact nature of the disease at first sight. Instances will arise where it is advisable, while maintaining an open mind as to the precise diagnosis, to treat the case as one of Sydenham's chorea ad interim. There are certain points, however, which may be of great assistance in assessing the probabilities of the diagnosis.

(1) *History of Early Retardation.*—A large proportion of residual cases will give a history of delay in walking, talking, learning, &c., though this will not be obtained in post-encephalitic cases. The subjects of Sydenham's chorea tend to be of superior mental development, and a history of delay in reaching "milestones" should always raise doubts as to the presence of this condition.

(2) *History or evidence of rheumatic symptoms* is strongly in favour of Sydenham's chorea; no significance can be attached to their absence in an early case, as chorea may be the first rheumatic symptom.

(3) *Coexistence of athetoid movements* is sometimes observed in Sydenham's chorea, but it renders the diagnosis much less likely.

(4) (*a*) *Flaccidity of the hyperkinetic limb* and (*b*) *disturbances of the respiratory rhythm* are characteristics of Sydenham's chorea which do not appear to be simulated in the residual forms.

(*a*) In cases of "hemichorea," or of unequal distribution of the movements on the two sides, inequality of tone may also be observed. In Sydenham's chorea the limb most affected by the movements is very commonly hypotonic at some period of the illness, whereas hypertonicity of the affected limb, if it occurs, must be extremely rare. On the other hand, a combination of spasm and hyperkinesis in the same limb is a common feature of residual cases, while hypotonus is very unlikely, except in the presence of cerebellar symptoms.

(*b*) Czerny,[8] in 1916, drew attention to disturbance of respiratory rhythm, which he considered to be one of the earliest signs of chorea. According to his account a paradoxic movement of the diaphragm (ascent during inspiration), similar to that resulting from phrenic paralysis, occurs when the child makes voluntary deep inspirations. This paper seems to have received comparatively little notice, though occasional reference to "Czerny's sign" is found in the continental literature. O. Göttche,[9] in 1926, investigated this phenomenon with the aid of the X ray screen, and confirmed Czerny's observation that during natural quiet respiration the rhythm remained normal, but that if the child was made to take deep respirations certain changes in the rhythm took place. These were found to be of three kinds: (1) paradoxic movement, (2) immobility of the diaphragm, and (3) delayed movement of the diaphragm, which descended after the thoracic expansion was almost complete.

The respiratory rhythm has been investigated in all cases of hyperkinesis seen by the writer since the

appearance of Göttche's communication. Some disturbance of the coördination of thoracic and abdominal movements has been found in almost all well-marked cases of Sydenham's chorea, while it was never found in a child affected with habit-spasm or general fidgetiness. It was also absent in all cases of choreo-athetosis or other cerebral lesion, with the exception of one child suffering from post-encephalitic hyperpnœa. It is suggested that this sign may be one of considerable value in the differentiation of choreiform conditions, and that it deserves greater attention than it has as yet received in this country. Its utility is much increased by the fact that it is never likely to be reproduced in hysterical affections.

Mimeses.

A further complication in the differential diagnosis of choreic movements is provided by hysterical mimesis. Choreiform movement may be simulated somewhat closely, though probably not exactly, as a result of a mental process whereby the movements which a child has experienced or observed are reproduced in himself, usually—as in all hysterical manifestations—in pursuit of an unconscious end. This may take the form a heteromimesis in an otherwise healthy child, as in Case 11. Still greater difficulty is provided by an automimesis of a former attack, which may simulate a true relapse of Sydenham's chorea (Case 12). As in this case, the diagnosis may be revealed by the response to treatment, but the potential value of Czerny's sign is obvious. The question of hysterical automimesis must be considered in connexion with that of the persistence of choreiform movement after the subsidence of active disease, to which the late Dr. Leonard Guthrie [10] applied the term "residual chorea." In some cases this is probably accounted for by a true hysterical manifestation, an automimesis, replacing the original attack without any interval of recovery, occasioned by some unconscious desire such as to remain away from school. In the majority of cases it is likely that another process is responsible—i.e., that the pattern-reactions acquired during the illness continue to operate, new paths of lowered synaptic resistance having been developed *in the cortex* as the result of habit. Dr. T. C. Hempelmann [11] suggests that "in certain instances choreiform movements of the head and neck may become perpetuated as a habit-spasm." It seems legitimate to extend this conception somewhat, and to say that choreiform movement of any part of the body may become, after prolonged repetition, the mode of response which occurs as the result of recently conditioned reflexes. For practical purposes this process transfers the case from the second group which I have described into the first, and the treatment requires to be altered accordingly.

Summary.

Of the large number of children who exhibit some form of hyperkinesis a considerable proportion are not suffering from an active phase of Sydenham's chorea, and will be adversely affected by enforced inactivity or isolation. Insufficient recognition of this fact frequently leads to unnecessary removal of children from school.

Two principal types of hyperkinesis are to be distinguished from Sydenham's chorea: (1) non-choreic, including habit-spasm and general "fidgetiness," (2) choreiform, which are the result of some other condition (usually residual) or are hysterical in nature.

Symptomatic chorea may be the only persisting symptom of a residual cerebral lesion, as is shown by observation of cases in which the evidence of associated pyramidal defect has gradually disappeared. A possible relationship between some of these cases and the pathological conditions described by P. Schwartz is worthy of consideration.

The disturbance of respiratory rhythm described by Czerny is of value as evidence of an active phase of Sydenham's chorea.

Notes on Cases.

CASE 1.—Aged 8. Seen on May 22nd, 1926. Two weeks' history of fidgeting with right hand, but not using it. Movements of right hand were typically choreiform and the arm was hypotonic. There was irregularity of respiratory rhythm, not amounting to Czerny's sign. Was kept in bed; much improved on July 6th, 1926; recovered by August.

In July, 1927, he was brought up again with the complaint that the movements had started again; the question of his having St. Vitus' dance was being discussed at school. He was extremely fidgety, but the movements were not typically choreic. On being told to stop them at once he did so. The mother was assured that he had not got chorea and he returned to school.

Probably a case of Sydenham's chorea in 1926 and of hysterical automimesis in 1927.

CASE 2.—Aged 7½. Seen on April 27th, 1926. Fidgety for several months; does not use the right hand. Two years ago had "chorea" in the right hand. Growing pains. On examination choreiform movements were seen in all limbs, but were most marked on the left side. The right arm was hypotonic and exhibited very little voluntary movement. Treated by rest. When seen in July there was little hyperkinesis, but the right hand was hardly used at all. On August 27th recovery in both limbs seemed complete. An unusual case of Sydenham's chorea, which appeared to combine the features of "sthenic" and "asthenic" types (L. Guthrie) on the left and right sides respectively.

CASE 3.—Aged 10. Seen on June 22nd, 1926. Brought to hospital with the statement that she had chorea. Had fidgeted with the right hand and foot for five weeks. Involuntary movements, more or less choreiform but not typical, were present on the right side. The history showed that the mother had right hemichorea when pregnant; a playmate had right hemichorea a few months ago, and chorea seemed to be a frequent topic of conversation at home. The child was told that she had nothing the matter with her, and the mother persuaded to stop talking about it. The movements ceased during the next few days and did not recur.

A case of hysterical heteromimesis.

CASE 4.—Aged 11. Brought to hospital on Dec. 21st, 1926, with the history that during the last month he "fidgets the right arm and leg, but does not use them," and that "he has begun to stammer." In March of the same year "he fidgeted in all limbs," but had ceased to do so in May. Typical hemichorea on right side; right arm and leg hypotonic. Czerny's sign definite and persistent. Heart: Borderline enlargement with systolic murmur. Treated by complete rest; the movements gradually improved and had disappeared by February, 1927, but the stammer persisted.

A true relapse of Sydenham's chorea. A point of interest is raised by the possibility that the occurrence of the stammer may have been connected with the transition from the use of one hand to the other.

CASE 5.—Aged 4½. Seen on Jan. 30th, 1925. Symptoms: Twitching and picking movements of hands, irritable and emotional.

Signs: Incessant choreiform movement of both hands; fidgets with feet. No other abnormality in C.N.S. Heart normal.

History: In December, 1923, he had an illness in which the "left eye turned out." The movements began in 1924 and have been present from time to time since then. He does not get to sleep until 11 P.M., then sleeps for the whole night.

The movements began to improve during February. In March he was sleeping the whole night, and the movements were slight. During part of May he was drowsy in the day time. When last seen in July, 1925, the movements were those of a mild case of chorea.

A difficult case, in which the diagnosis between Sydenham's chorea and encephalitis could not be made with certainty.

CASE 6.—Aged 11. Seen on March 12th, 1926. Symptoms: Spills things, speaks indistinctly, makes faces, and his legs give way. He was said to have been normal in every way at the end of 1924; the movements began gradually soon after this. They often improved for a time, but never passed off. In 1925 he attended a nervous hospital, diagnosis "chorea."

Signs: Typical choreiform movements, not very severe. Muscle tone and reflexes normal. I regarded him as Sydenham's chorea and treated him accordingly. Six weeks later I noticed the boy dribbling, and was told that this sometimes happened, and that he had some difficulty in swallowing. Two weeks later there was slight but appreciable rigidity of the right arm, which did not swing when he walked.

A case of encephalitis in which symptomatic chorea was the only manifestation.

CASE 7.—Aged 6. Brought to hospital in July, 1927. Said to have St. Vitus' dance and taken away from school

light choreiform movements of both hands were seen, ather slower than usual and occasionally merging into thetoid movements. Reflexes and tone were normal; zerny negative. The condition resembled a mild attack of ydenham's chorea.

The child had attended me some years previously. From ie old notes it was found that she had been brought up in 923 (aged 2½) because she did not talk or use the right hand. had found slight spasticity of the right arm and leg, and ad diagnosed a residual birth hemiplegia. The left arm ad been tied up and recovery of function in the right arm ook place rapidly, being almost normal in July, 1924.

A case of symptomatic chorea in a child who suffered om a cerebral lesion. If the previous history had not been btainable she would probably have been regarded as ydenham's chorea.

CASE 8.—Aged 6. Admitted to the Victoria Hospital for hildren in March, 1924, under the care of Dr. R. C. ewesbury.

Symptoms: Fidgets with the left arm and leg, is twitchy," and uses the left hand very little.

Signs: The left hand was held in a peculiar position with ie thumb adducted. Sudden twitchings of the left arm id leg were observed. There was slight dragging of the ft leg on walking fast. The movements were more or less oreiform, but not absolutely typical. There was slight it definite increase of tone on the left side. Deep reflexes ere usually increased on the left side, but the hyperkinesis ade an accurate comparison difficult.

I considered the child to have a defect of the pyramidal act and the corpus striatum or its central connexions. ight is thrown on this case by the previous and the subseient histories.

Previous history: Had been an in-patient under Dr. ewesbury in 1923 (aged 3). Symptoms: Twitching of face, ovements of left arm, turning up of left eye; present for ur months, getting worse. Signs: Walked unsteadily, ckward in talking; weakness of left arm, leg, and internal ctus.

Subsequent history: The right arm was tied up during rt of the day and the child began to use the left hand much tter. She was, however, readmitted in September, 1925, ving been diagnosed elsewhere as chorea. The twitching the left side was worse; there was very definite increase tone and deep reflexes in the left arm and slight increase the left leg. Plantars: Flexor right, indeterminate robably extensor) left.

This case seems to provide an undoubted example of mptomatic chorea, in association with a cerebral lesion hich was either residual or so slowly progressive that its istence might escape notice even at the age of 8. I am uch indebted to Dr. Jewesbury for kindly allowing me to amine and record this case.

CASE 9.—Aged 7. Was brought to the West End Hospital a case of ? chorea, and admitted under the care of Dr. . R. Reynell, by whose kind permission I examined him d am including him in this series.

Symptoms: Movements of face and of all limbs, most arked on the right side.

History: No evidence of retardation, but has had movenents of this kind since infancy.

Signs: The movements were typically choreic, and on perficial examination the boy resembled a case of denham's chorea. There was slight internal strabismus. odominal reflexes left brisker than right, knee- and ankleks right brisker than left. Plantars: Definite flexor left; riable, usually atypical flexor right. There was some akness of the right arm; no increase of tone could tually be appreciated, but it swung less than the left nen he walked. Czerny negative. No evidence of eumatism.

A case of symptomatic chorea resulting from a residual rebral lesion.

CASE 10.—Aged 5¾. Brought to hospital in February, 26, for weakness of legs and movements of arms; had en sent away from school as chorea. History: Details delivery were not obtainable, except that he was "born ie with the cord twisted round his neck." He had peared to the parents to be normal during infancy, but uld not sit up alone until he was 1½. Talked well at 2. id been fidgety all his life.

Signs: Typical choreiform movement of all limbs, which times became more slow than usual; when lying quietly bed they were occasionally athetoid in type. Abdominal lexes absent. Deep reflexes unreliable owing to the ovements, but usually more brisk on the left side. There s a slight degree of spasm in the left calf, and he usually lked with the heel off the ground, but could get it down nen told to. Plantars: Flexor right, extensor left. The rebro-spinal fluid showed no abnormality.

He improved quickly in hospital and was obviously much tter when actively occupied. On discharge he went back to school. In December, 1926, movements were still present, the abdominal reflexes were just obtained, spasm of the calf was barely appreciable, and the left plantar reflex was indefinite. Czerny's sign was absent. Had he been examined first at this time there would have been little evidence of the pyramidal lesion. He was last seen on July 8th, 1927. He was still rather fidgety and the movements were roughly choreiform; no athetosis was seen. The reflexes were absolutely normal. He now presents the features of a mild symptomatic chorea, the diagnosis from Sydenham's chorea depending entirely on knowledge of the former physical signs.

A case of residual chorea or choreoathetosis (? birth hæmorrhage) associated with a pyramidal defect which recovered.

CASE 11.—Aged 9. The elder brother of Case 10. Had no symptoms until 1926. A few weeks after Case 10 returned home from hospital this patient began to fidget all over and speak less distinctly. He continued to go to school and did his work quite well. In October, 1926, he was brought to me because the school authorities said that he had chorea and should not attend.

Signs: Generalised hyperkinesis, not very severe; choreiform, but not absolutely typical; no abnormality of attitude. Czerny negative. The movements ceased when his attention was fixed on something else, and returned afterwards. He appeared to be much disappointed at being told that he had not got his brother's complaint and need not come into hospital, but must stop fidgeting. He returned to school, the movements ceased almost immediately and had not returned when he was seen in December, 1926.

An hysterical mimesis of the brother's condition.

CASE 12.—Aged 10. Brought to the West End Hospital on Feb. 8th, 1927, suffering from acute generalised choreiform movements, so violent that detailed examination was impossible. She appeared distressed and excited. The child had been an in-patient in a general hospital for two months in the previous autumn, suffering from chorea. She had been normal on discharge and remained so until the day before she was brought up to me, when a sudden return of movements took place. I regarded her as a relapse of Sydenham's chorea and recommended her for admission. Three days later she walked quietly into hospital with no sign of hyperkinesis or other abnormality. When I saw her next day she lay quietly in bed and could be examined with ease. She was made to get up and run round the ward; neither this nor any other activity led to any return of the movements.

Her condition appears to have been an hysterical automimesis of her previous attack of Sydenham's chorea, simulating a relapse. In recommending her for admission I had fulfilled the child's unconscious desire and cured the neurosis.

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THE SURGICAL SIGNIFICANCE OF CORPULENCE.

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ADIPOSITY of simple or exogenous origin, being an aberrant nutritional state rather than a physical disease, is encountered quite as often in the practice of surgery as in the sphere of medicine. It is always the result of faulty feeding over a long period of time, but it can be cured by dieting. While the management of "thinning cures" must rest primarily with the dietitian, the penalties of being too fat and the results which may be expected from a course of weight reduction are of considerable moment to the surgeon.

Life assurance companies are continually preaching to the public the serious menace to health of over-nutrition. Their opinion is based partly on physicians' reports, partly on statistical evidence. From the purely surgical point of view, not half enough has ever been said against corpulency. Unnecessary and preventable, it creates disease, obscures diagnostic signs, influences operative technique, and detracts from an otherwise good prognosis.

Surgical Conditions Depending on an Obese State.

These may be classified according to their mode of origin, static, mechanical, and metabolic.

Static Effects.—One effect of carrying about a burden of dead weight on the body is to strain its weight-bearing structures. For instance, a certain degree of lordosis is necessary in order to compensate for the pendulous abdomen and so an excessive strain falls on the sacro-iliac joints. Many stout women complaining of an aching pain in the lower part of the back from this cause, especially severe after standing or walking, are referred to the gynæcologist for elucidation. Osteo-arthritis of hips and knees is a common companion of old age, being due to a gradual degeneration within the joint. The increased strain imposed by excessive weight-carrying precipitates the onset of this condition. It is widely recognised that flat feet are prone to occur with the advent of the menopause, a time when figures are notoriously apt to spread; indeed, obesity predisposes to flat feet at any age. The orthopædist sees many of these cases.

Mechanical Effects.—When an excess of fat is present in the body, although the bulk is contained in the subcutaneous tissues, omentum, and other of the large depôts, it will be found that a certain amount has infiltrated the muscles. This infiltration impairs muscular efficiency, the impairment being noticed first where strain is greatest; thus obesity predisposes to herniæ. Indirect inguinal hernia can only occur, of course, if a congenital sac is already present, but the direct or acquired type is commonly associated with fatty infiltration of the muscles and resulting "flabbiness." The umbilical hernia of adults furnishes another example; fat from the extraperitoneal cellular tissue protrudes through the stretched and weakened linea alba, eventually being followed by a dimple of peritoneum. Increase of intra-abdominal pressure, consequent on the deposition of more fat in the omentum, and mesentery, causes the hernia to enlarge progressively. Diverticulitis of the colon, also, is predisposed to by fatty infiltration and consequent weakness of the bowel wall, although the false hernial protrusion of mucosa may be difficult to demonstrate in the overladen appendices epiploicæ.

Metabolic Effects are not fully understood but, in some cases, obesity is associated with a diminution in rate of the metabolic processes. There is some evidence to show that the cholesterol content of the blood is greater in fat than in normal people, which may be the explanation of the higher incidence of gall-stones in the former; another factor which predisposes to cholelithiasis is the lethargy associated with the obese state. Again, acute pancreatitis occurs most frequently in fat subjects, although the reason for this association is obscure. The inter-relationship between obesity and the ductless glands may be mentioned in passing, particularly noticeable after the operation of double oöphorectomy. Freed by surgery from the dangers of ovarian disease, the development of corpulence at a later date with all its attendant misfortune is the rule. Conversely, sterility without other cause is not uncommon in the over-nourished; reduction of weight, not insufflation of the Fallopian tubes, is the more likely to effect the cure.

Obesity as a Factor in Obscuring Diagnosis.

Every clinician has felt, at times, the hopelessness of adequate palpation when confronted with an enormous jelly-like abdomen. Enlarged viscera and tumours can lie completely buried, while even in such conditions as acute appendicitis it may be almost impossible to detect muscular defence or feel an abscess. Percussion through some inches of fat is non-informing and sometimes misleading; we have seen a normal chest needled for fluid owing to impairment of resonance from this superficial cause. Pelvic examinations are rendered much more difficult; sometimes it is impossible to palpate the uterus. A lump in an adipose breast may be so masked that it remains a mere lump with no characteristics upon which to base a diagnosis.

The radiologist also has his difficulties, many an otherwise passable film being reduced to obscurity on account of fat limiting the penetration of the rays.

Influence of Obesity on Operative Technique.

A serious problem in connexion with operation on obese subjects is that of anæsthesia. The thick neck renders maintenance of an efficient airway difficult, and the fatty heart predisposes to cardiac failure. Owing to the relatively poor blood-supply to adipose tissue, local anæsthesia is unsatisfactory in that it predisposes to necrosis and consequent infection. In gall-bladder cases, a cholecystectomy of average difficulty may become a most formidable undertaking. Owing to the depth at which the surgeon has to work, blunt dissection is apt to degenerate into blind dissection, ligatures are tied under difficulty and perhaps insecurely, whilst accurate insertion of deep stitches may be impossible. The discriminating surgeon realises these handicaps and may therefore rest content with the palliative operation of removal of the stones and drainage of the gall-bladder.

The abdomino-perineal removal of the rectum furnishes another trite example, careful dissection in the floor of the pelvis in a fat male requiring the maximum amount of self-control, skill, and dexterity. In fact, the penalty of obesity in connexion with abdominal operations is a very definitely increased operative mortality, or a palliative instead of a curative operation.

The convalescence of stout patients is often prolonged as a result of delay in the healing of their wounds. In them fat oozes from the cut surfaces, the resulting combination of blood and liquid fat forming an excellent culture medium for the growth of bacteria. The edges of wounds made through fatty parietes should always be approximated with deep sutures, while a drain at each end encourages healing by first intention.

Prognosis after Operations on the Obese.

From the nursing point of view, 18 or 20 stone of helpless humanity may cause the stoutest heart to quail. The difficulty of lifting and turning such a patient, if the available staff is inadequate, reacts very unfavourably on convalescence. If the weather be hot, these invalids suffer from it more than ordinarily. Death from heat-stroke while swathed in cotton-wool and a large abdominal or breast

andage is not unknown even in this country. The evelopment of broncho-pneumonia, especially fre-uent after the administration of ether, adds to he nursing difficulties; yet one dreads to use chloro-orm in these cases on account of the tendency to cidosis. Post-operative lung complications should e anticipated by propping up the patient in bed s soon after operation as possible, using artificial ieans of keeping him there. The exhibition of timulants and stimulating expectorants before they ppear to be necessary is a sound prophylactic ieasure.

The effect of obesity on the late results of operative rocedures varies with the disease. In one situation n excess of fat is sometimes welcomed by the irgeon—namely, the breast. Excision for carcinoma rendered easier in proportion to the plumpness of ie patient; moreover, the greater the amount of it, the wider is supposed to be the margin of safety. his advantage, if so it be, is somewhat neutralised y the additional difficulty of diagnosis. Percival ills noted in a series of cases that only 11 per cent. f the obese, as compared with 66 per cent. of the ormally proportioned, were "well" six years after peration. Late diagnosis, so fatal in carcinoma, robably accounts for the difference. By the time iat a stout woman feels a cancerous lump in her reast, the early stage of the disease is likely to have assed.

These few observations on the surgical disadvantages f the portly figure are worthy of reflection. Many iore could be recorded without encroaching on its urely medical aspects, although the two are usually ombined in the same person. The material for a ampaign against corpulence is ample and convincing. n cases of emergency, the surgeon must make the est of a severe handicap; but in after-care, as well s in less urgent cases, an insistence on careful weight eduction has much to commend it.

Weight Reduction from the Surgical View-point.

Since fat comes from food, surplus fat must owe its rigin to the same source. The cure, therefore, of ver-nourishment is under-feeding. A short review f the results which can be anticipated from reducing iets is interesting and instructive. Fat can be emoved quickly or slowly, in lesser or greater mounts. The practical utility of the methods may e seen from the following summary.

Rapid Methods.

	Expected *total* loss of fat in lbs.
Fasting, seven days, except for water ..	5 to 6
Fasting, 14 days, except for small amounts of protein	8 to 10
Greatly restricted diets—e.g., 21 days on "milk and potato cure"	

Slow Methods.

	Expected *weekly* loss of fat.
Restriction of fats and carbohydrates, slight increase of protein, great increase of roughage, over a long time	2 lb.

The difference between the two groups is similar o that which distinguished the hare from the tortoise the fable. Rapid reduction methods show a poor turn for all their violence of speed. A loss of to 10 lb. of fat is seldom sufficient to effect a cure, hile the personal effort required to obtain even iat amount is great. Sometimes, as when obesity id high blood pressure are associated, a speedy eduction is imperative, but muscular weakness and ie effects of acidosis may need to be combated. hese are the two chief dangers.

The slow reduction plan, therefore, is more generally pplicable; it is safe, it is sure, for 99 per cent. of ie people who pursue it will become thin; the ffects are permanent, since it teaches the reducer o avoid for all time the fat-forming elements in the iet. By removing 2 lb. every week or 20 lb. in n weeks, repeating the course as necessary, the ost ample of adipose coverings will disappear. It is important for surgeons, however, to understand the conditions under which satisfactory slow reduction can be attained.

The corpulent as a class love their meals, whatever they may declare to the contrary. Their endocrine glands may not be so active as those of thinner people, but the real basic cause of their adipose state is an indulgence, past or present, in the fat-forming articles of food. To hand to such as these a diet-sheet with the simple instruction "go hence and become thin," is quite useless; without personal encouragement and detailed dietetic guidance they will remain for a certainty adipose and inoperable to the end.

The first requisite for success, therefore, is time and patience on the part of the dietitian, as well as the will to conquer in the patient himself. By strengthening the latter, the surgeon is indispensable, but the actual dieting of these cases can be left quite well to a junior on his staff, whose whole-hearted interest and coöperation is assured. It is he, then, who should see that the reducing diet is suitable and properly applied, but the surgeon must retain the right of determining the amount of fat to be removed and in some cases, too, the rate of loss. The effectiveness of the dietetic prescription under such conditions of team-work is exemplified in the following case:—

Mrs. R. suffered from a small umbilical hernia, which was deemed inoperable on account of her adipose state. After losing 3 st. of fat by means of dieting, she was returned to the surgeon for operation; he requested, however, that another 2 st. should be removed before he would operate, making 5 in all.

The second requisite for successful weight reduction is the adoption of a scheme of dieting which can be adjusted easily to the particular requirements of the patient. By altering the quality of the food which is eaten, balancing the items and counting the calories, the fat person will lose his corpulence, but in so doing he need not be deprived of all the things he likes, nor made to eat all those which he never cared for.

The happiest results are obtained by building the diet to the individual in accordance with his food fancies and bodily requirements, rather a difficult task for any other than the professional dietitian. In most instances it will suffice for the house surgeon or family physician to prescribe a ready-made "skeleton diet"[1] worth about 1200 calories; this contains all those elements which are needed for the maintenance of health and the repair of tissue. If, while living on it, the patient loses more than 2 lb. a week, he may choose what he pleases from a "graded list of foodstuffs"[1] the extra quantity being limited to 100 calories a day; again the effect is noted after seven days, additions or subtractions being made accordingly. Every ten weeks a fortnight's respite from the strict régime should be granted.

Knowing the amount of fat to be lost, the surgeon can almost fix the date for his operation in advance. A steady loss of a stone and a half every three months is an average rate of progress; six stones need a year. There seems no limit to the amount of fat which can be removed. After emergency operations on the obese, the reducing diet can be commenced on the same day as the stitches are removed; the skeleton contains a sufficiency of vitamin C in the form of fresh fruits and green vegetables to ensure firm healing of the wound. Convalescence is too often regarded as a period for feeding up, whereas with stout people it should be used to inaugurate the process of thinning down.

In view of the penalties of corpulence and the comparative ease with which it can be reduced, it is incumbent on surgeons to keep in touch with over-nourished patients during their efforts to become thinner; in this way, fewer would suffer from surgical ailments or would be excluded from the benefits of surgery.

[1] Details of a skeleton diet with a graded list of foodstuffs appears in the Practitioner, May, 1928, by one of the authors.

THE INFLUENCE OF ULTRA-VIOLET RAYS ON INDUSTRIAL OUTPUT.

BY A. LISLE PUNCH, M.B., M.R.C.P. LOND.,
AND
RUSSELL WILKINSON, M.V.O., M.R.C.S. ENG.

With the collaboration of

R. STC. BROOKE, M.A.,
AND
C. S. MYERS, C.B.E., M.D., F.R.S.

DURING October, November, and December, 1925, an investigation was conducted into the influence of ultra-violet rays on the output of girls engaged in the manufacture of chocolates in the works of Messrs. J. Lyons and Co., Ltd., at Greenford, Middlesex. The treatment was applied by Dr. Lisle Punch and Dr. Russell Wilkinson. The data of output were obtained by Mr. R. StC. Brooke, psychologist to the firm. The general planning and supervision of the investigation and the preparation of most of the following report were the work of Dr. C. S. Myers, aided by a grant to the National Institute of Industrial Psychology from the Laura Spelman Rockefeller Memorial. The investigators are indebted to Mr. Julius Salmon, one of the directors of the firm, for the interest which he showed in the experiment and for the facilities which he gave for its smooth conduct, and to the British Hanovia Company for the loan of the necessary apparatus.

Twelve women employees of the firm, engaged in the manufacture of chocolates, volunteered for the experiment. This was divided into three observation periods: (*a*) a "pre-treatment" period of two weeks, (*b*) a "treatment" period of four weeks, (*c*) a "post-treatment" period of two weeks. Each girl was engaged throughout the entire experiment in making one and the same kind of chocolate, but the work of each differed in detail from that of her colleagues. The data of the output of each of the 12 girls were collected hourly throughout each of the three periods of observation. Three of the girls served as a control group. They believed that they were being given ultra-violet ray treatment, whereas in fact the ultra-violet rays were screened from them. Of the other nine girls one fell ill and was away from work for 17 days after three days' data had been collected from her during the pre-treatment period. Her records have therefore been omitted.

Treatment was given daily at 8 A.M. for four weeks. Of the 12 treatments the first four were on consecutive days, while in the second week three treatments, in the third week three treatments, and in the fourth week two treatments were given to each girl. Exactly the same procedure was carried out on the controls. The initial exposure was two and a half minutes for the whole body, back and front. Thereafter the exposures were increased gradually up to thirty minutes, according to the degree of erythema produced in each case. For the first four exposures each patient was treated individually with the air-cooled mercury-vapour lamp. Subsequently the girls were treated in batches of three at a time with the Jesionek lamps. The same lamps were used for the control group, but a sheet of "triplex" glass, 5/32 in. in thickness, was placed as a screen between the patient and the quartz burner. The absorption limit of this glass at this thickness being 3300, all the ultra-violet rays were cut off and no rays of shorter wave-length than 400 mm. reached the patient.

The findings had to be adjusted owing to the following circumstances: (1) During the pre-treatment and post-treatment periods of observation, the girls worked daily from 8 A.M. to 5.30 P.M. (with an hour off for dinner between noon and 1 P.M.); during the treatment period they began work at 9 A.M., as they were under treatment each morning between 8 and 9 o'clock. (2) At the start of each morning and afternoon spell of work the chocolate had to be tempered, so that the actual manufacture did not begin until 10 or 15 minutes later. (3) A rest pause of about four minutes was given during each spell of work. (4) A period of clearing-up occurred towards the end of each spell.* (5) Temporary absences from the room or from the works had to be allowed for.

* For this and other reasons the output during the last half hour of the day is not reliable; no records were therefore taken between 5 and 5.30 P.M.

The eight girls subjected to the ultra-violet rays whose individual output throughout the three periods was regularly recorded, will be designated respectively by the letters A–H. They fall into two groups: (1) those whose output was evidently increased (A, B, C, D) upon exposure to ultra-violet rays and (2) those whose output showed no change (E) or whose output was reduced (F, G, H) as the result

TABLE I.

—	Pre-treatment.	Treatment.	Post-treatment
A	96·6	90·0, 97·4 } 93·7	108·0
B	110·2	107·6, 108·9 } 108·2	117·0
C	103·7	110·0, 107·4 } 108·7	107·6
D	117·8	120·7, 119·1 } 119·9	122·0

of the treatment. Of the latter group, it is noteworthy that H gave no reaction at all to the rays while E gave a fair reaction, and F and G gave only average reactions. On the other hand, of the group that responded favourably to the treatment, A, B and C gave extremely good reactions to the rays while D gave a fair reaction. Table I. gives the average daily output in pounds per worker per fortnight. The total output of this group during the post-treatment period is thus 6·14 per cent. greater than during the pre-treatment period. The figure for A reaches 11·8 per cent.

The Subject's Own Statements.

The girls' own statements about the results of treatment are interesting. A said that she felt better and wanted more of the rays. B was most

TABLE II.

Pre-treatment.	Treatment.	Post-treatment.
1st week .. 87·5	3rd week .. 90·25	7th week .. 92·75
2nd ,, .. 93·75	4th ,, .. 94·25	8th ,, .. 87·25
—	5th ,, .. 92·25	—
—	6th ,, .. 91·00	—

enthusiastic; she found that she had more energy and that she could settle down more easily to her work. She also asked for a further course of treatment. C declared that she had slept better and that

TABLE III.

—	Pre-treatment.	Treatment.	Post-treatment
F	90·9	85·7, 83·7 } 84·7	84·0
G	73·5	71·15, 68·25 } 69·7	69·0
H	86·4	82·6, 79·2 } 80·9	84·1

her appetite had improved during treatment, but that she felt tired after it had ceased. D said that she felt distinctly better and wanted more. E, whose output gave no evidence of being affected by the

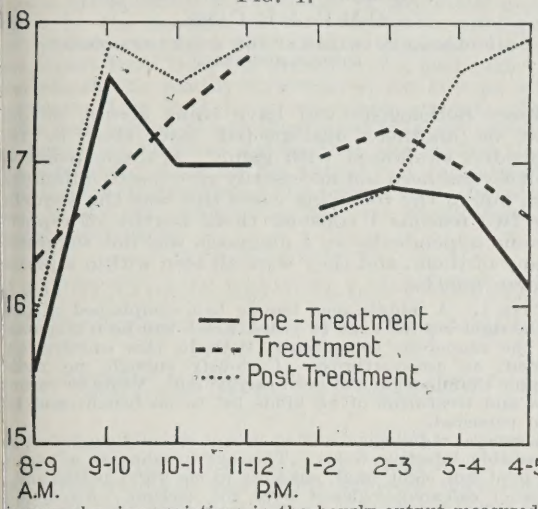
TABLE IV.

—	Pre-treatment.	Treatment.	Post-treatment
I	60·1	63·2, 65·4 } 64·3	63·9
J	56·2	56·7, 58·9 } 57·8	56·0
K	99·5	98·0, 103·9 } 100·9	101·7

rays, said nevertheless that her "nerves were better" after the treatment. But her output showed such wide fluctuations from week to week (as shown by the following data of average daily output) (Table II.) that no conclusions can be drawn.

F, a highly neurotic girl who was reported as difficult" and unreliable, declared that she felt no etter after the treatment; G was suffering from a old both before and during treatment; H, who ailed to give any cutaneous reaction to the rays, aid that she felt no benefit. Table III. gives the

FIG. 1.

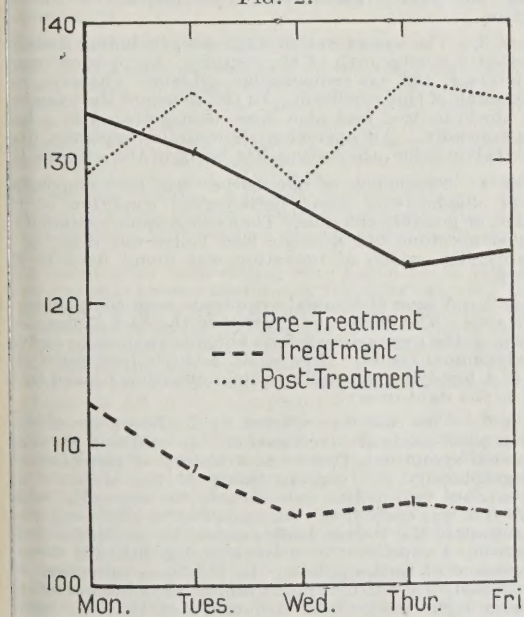


iagram showing variations in the hourly output measured in pounds. (Worker D.)

verage daily output of these girls per fortnight for ie three periods.

The three girls of group (3), the control group, ill be styled I, J, K. "I" claimed to feel better, it only while she was subject to "treatment"; er output improved correspondingly during that eriod, but fell off later. J felt little or no difference

FIG. 2.



ariations in the daily output, of Worker B, measured in pounds. The "treatment" curve represents the output of a working day of *seven* hours, whereas in the other two curves an *eight* hour day is worked.

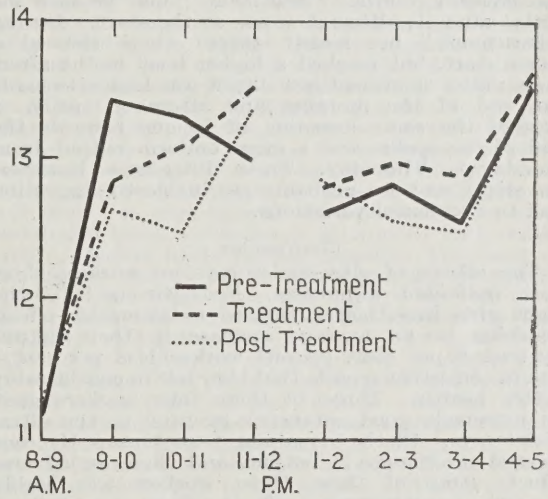
id showed practically none in her output. K, escribed as an excitable girl, fancied that she felt etter for the treatment and showed a slight, but idely fluctuating, improvement, her average daily itput during successive weeks being 98·75, 100·25, 5, 101, 106·25, 101·5, 100·5, 103. Table IV. gives ie comparable data obtained for this group.

Any real improvements in the output of the girls of this group may be ascribed: (1) to suggestion, which was probably operative in I and K; (2) to the beneficial effect of other rays—e.g., infra-red rays, to which this group was daily subjected during the period of the "treatment"; (3) to practice. Mr. Brooke wishes to point out that an expert worker like J would not have had much recent experience of the particular "line" on which she was engaged throughout the experiment, but as her progressive rise in output was most manifest during the treatment period and fell off somewhat during the post-treatment period, her behaviour is also perhaps partly ascribable—although far less than that of I and K—to suggestion. According to whether we omit or include J, the percentage improvement in the output of this group is only 1·6 or 2·9.

Output of Workers who were Benefited.

The forms of the work curves of hourly and daily output obtained for each of the 11 girls during the three periods of observation confirm the results

FIG. 3.



Hourly output of Worker H, measured in pounds.

derived from the weekly data of output. The work curves of hourly output after treatment indicate for A a reduction of fatigue at the end of the afternoon spell; for C a reduction of fatigue at the end of the morning spell; and for D a reduction of fatigue at the end of both spells. All these workers belong to the group whose output was increased by exposure to ultra-violet rays. The lessened fatigue at the close of each spell of work during and after treatment is illustrated in the case of D in Fig. 1. Instead of the fall that occurs in the continuous curve towards the end of the morning's and afternoon's work, the two dotted curves generally show a well-marked rise, indicating lessened fatigue and the ability to spurt as the work draws to a close.

Similar beneficial results are revealed by an examination of curves of the *daily* output of workers of the same group. After treatment A returns on Monday keen and interested, and is thus more than able to counteract the loss of adaptation and practice due to the week-end absence. After treatment C shows less fatigue during the latter half of the week. D now reaches a far larger output than before on Thursdays. B manifests a strong tendency to abolish her previous progressive daily diminution in output from the beginning towards the end of the week. This improvement is seen in Fig. 2.

The Output of Workers who were not Improved by Treatment.

A study of the curves of hourly output reveals in E after treatment a poorer start in the morning and afternoon, and greater fatigue towards the end of the

afternoon ; in F and G a poorer start in the morning, in G greater fatigue in the afternoon, and in H a slower improvement or an actual lessening of output during the early hours of the morning and afternoon. The curves of daily output indicate in F and G a more adverse "Monday effect" after treatment. Accompanying these deleterious signs, there are certain tendencies which otherwise might have resulted in increased output. E, F, and G all show in the hourly output curves after treatment a speedy and progressive recovery from their initial bad start in the mornings. H shows an increased ability to spurt during the last hour, especially of the morning spell (Fig. 3). The daily output curve of E, whose output showed no clear evidence of increase after treatment, indicates a less marked fatigue towards the end of the week after treatment.

Control Group.

J showed a worse initial start in the morning and very little evidence of any effect of the pretended treatment in the hourly and daily output curves. K's daily output towards the end of the week fell off considerably during "treatment," but became far better after it, although worse at the start. During "treatment" her hourly output curve showed a worse start, but reached a higher level in the afternoon ; after treatment her output was higher towards the end of the morning and afternoon spells. I showed the same lessening of fatigue towards the end of the spells, and a more uniform output from Monday to Thursday. These differences, however, are slight and are probably ascribable to suggestion and to accidental variations.

Conclusions.

The effects of ultra-violet rays on workers show *great indiaidual differences*. Four (Group I.) of the eight girls investigated showed a favourable effect, resulting in an average increase in their output by over 6 per cent. (in one worker 11·8 per cent.), and in consistent reports that they felt in considerably better health. Three of these four workers gave an extremely good cutaneous reaction to the ultra-violet rays. Of the remaining four (Group II.), one showed no change in output, and three an adverse effect. (One of these three workers was highly neurotic ; another was suffering from "colds." A third failed to give any cutaneous reaction to the rays.) Of the other three girls of Group II. who did not respond favourably to treatment, one gave a fair and the two others only average cutaneous reactions. With one exception the workers in Group II. failed to notice any improvement in general health.

It is important to bear in mind that the works in which this investigation was conducted are of a model character, situated at Greenford, Middlesex, and that the workers are of a superior type, living in the neighbourhood where they enjoy what almost amounts to country sunlight. More striking results might be expected if the experiments were repeated on a larger scale in a factory in some poor district of a crowded city. The employment of a control group is essential.

ROYSTON COTTAGE HOSPITAL.—The Prince of Wales recently opened a new children's ward in this Hertfordshire institution, which has always been free from debt. There is a hospital workers' league which contributes £1000 a year to the funds. Since it was opened in 1870 it has constantly been full and 25 per cent. of the patients have been children.

IMMUNISATION AGAINST DIPHTHERIA.—The Manchester Public Health Committee has reaffirmed its approval of a report by the medical officer of health, Dr. Veitch Clark, regarding immunisation against diphtheria. The medical officer recommended that a scheme for the free inoculation of children be put in operation by the Public Health Committee acting with the Education Committee at the school clinics, the welfare centres, and the civic buildings. Only children would be treated whose parents permitted.

Clinical and Laboratory Notes.

LEAD SHOT IN APPENDIX.

BY S. GILBERT SCOTT, M.R.C.S. ENG., D.M.R. & E. CAMB.,
RADIOLOGIST IN CHARGE OF THE X RAY DEPARTMENT, LONDON HOSPITAL.

MOST radiologists will have come across, at one time or another, unsuspected lead shot in the appendix, swallowed with game. A single pellet or even several need not necessarily give rise to inflammation, but in the following cases this was the sequela. For two reasons I consider them worthy of report : chronic appendicitis as a diagnosis was not suggested in any of them, and they were all seen within a period of four months.

CASE 1.—A middle-aged female had complained of pain in the right hip for some 16 years, which had been diagnosed by the numerous consultants, both in this country and abroad, as osteo-arthritis. Curiously enough, no radiographic examination had been carried out. Visits to various spas and treatment of all kinds led to no benefit and the pain persisted.

A general radiological survey was eventually suggested for a possible infective focus. This survey showed a normal hip-joint but eight small shadows in the right pelvis and a mass of calcareous glands over the sacrum. An opaque meal further demonstrated the shadows to be eight lead pellets in a fixed appendix. Operation confirmed the findings and the patient's symptoms disappeared. The patient confessed a weakness for grouse.

CASE 2.—By a curious coincidence this patient was sent to me for a general radiological examination the following week, on account of multiple arthritis and vague abdominal pains of some years' duration. Here again eight lead pellets were located in various parts of the appendix, which together with the cæcum, was firmly fixed. Operation confirmed the findings. A liking for partridge, a good partridge season, and faulty mastication were responsible for the condition.

CASE 3.—The symptoms in this case, including melæna, suggested a new growth of the rectum. An opaque enema was advised, but no radiographic evidence whatever was forthcoming of this condition. In the course of the examination, however, two lead shot were demonstrated in a low-lying appendix. An operation showed the appendix fixed to the pelvic colon, the two pellets being in the extreme tip.

CASE 4.—Frequency of micturition was here responsible for the diagnosis of some pathological condition of the bladder, or possibly calculus. The radiographic examination revealed no stone but a single lead pellet was detected in the appendix, which at operation was found fixed to the bladder.

CASE 5.—Vague abdominal symptoms were complained of in this case. The doctor, as "a shot in the dark," diagnosed the case as the menopause reflex, but was anxious to exclude any abdominal lesion. Here again a single lead pellet was seen in a low-lying appendix, which operation proved to be fixed to the right ovary.

CASE 6.—This case was referred to the Brook-street clinic for a general medical investigation. In addition to vague abdominal symptoms, there was a history of hæmatemesis. Radiographically no organic lesion of the stomach was detected, but two pellets were seen in the appendix, which in this case was quite free. An unsuccessful effort was made to manipulate the foreign bodies out of the appendix under the screen—I consider this manœuvre legitimate if there is no evidence of inflammation. In this case operation was not advised. A further radiographic examination of the appendix eight weeks later demonstrated that the pellets had been dislodged and passed.

Nature appears to have carefully camouflaged the condition of the appendix in these cases and the true state of affairs was only arrived at in the course of a general radiographic investigation. As would be expected, the condition is found more frequently in private patients. Now that a general medical overhaul, irrespective of symptoms, is possible, there is little doubt that more cases of this condition are detected than formerly. As previously mentioned, it is possible to have a pellet lodged in the appendix

ithout giving any radiological evidence of inflammaon such as fixation and, as illustrated in the last ıse, it may become dislodged and pass per vias ıturales.

Mastication must be very deficient nowadays. nyone having a gold denture or even metal teeth lings—and there are very few who have not—ecome conscious of the presence of any other metal ›ject in the mouth, as this creates a miniature ectric battery and a mild electric current. In any ıse, apart from this, the presence of a lead pellet in od should be readily appreciated by anyone who asticates this food to a reasonable extent. This ulty mastication is well illustrated by a girl present-g herself at hospital stating that she *thought* there as something stuck in her throat. A radiographic :amination demonstrated the presence of a full-sized)en safety-pin, which she had no recollection of ıving swallowed.

ARAPHENYLENE-DIAMINE LABYRINTHITIS.

By E. Watson-Williams, *M.C.*, M.Chir. Camb., F.R.C.S. Edin.,

HONORARY SURGEON, EAR, NOSE AND THROAT DEPARTMENT, BRISTOL ROYAL INFIRMARY.

Paraphenylene-diamine is the essential ingredient several popular hair dyes or "restorers." The ermatitis which in susceptible subjects may follow s use has already given rise to considerable litigation; is perhaps well, therefore, to recognise that other ssues may be damaged by this drug, which appears have a selective action on the labyrinth. Attention ıs been drawn to this in France by Dr. Paul ıurens:—

"Acute cases begin with vague giddiness, sometimes companied by nystagmus; tinnitus appears later and is ›essant. In the chronic form the same symptoms occur, d gradual deafness ensues. . . . This poison must not be ›gotten when treating obscure cases of toxic labyrinthine sease. The condition improves slowly when the dyeing stopped." [1]

The following is an illustrative case:—

Mrs. S. R., aged 33, was sent to me early this year. In r own words, "I have a noise in the left ear, and it makes › giddy and sick all the time." The ear had recently come "quite deaf." The first signs of trouble had peared in 1926, when attacks of tinnitus and "gastritis" gan to occur; but during the last three months there had ›en no remission, and tinnitus was severe and incessant. ue rotatory vertigo followed any movement, with a ıdency to fall to the left. During this period also she had d no appetite for breakfast, though other meals were less ›ected.[2]

On examination both drums were found to be retracted. ıere was slight nerve deafness in the right ear, very severe the left. Rinne's test was positive on both sides, and in ›eber's test the sound was referred to the right (good) ear. ıe left labyrinth appeared insensitive to caloric stimulation. ıere was no nystagmus. Inflation by means of a catheter owed that the Eustachian tube was normal, and produced change at all in the symptoms.

While discussing the possible causes of labyrinthine afness coming on rather rapidly in an apparently healthy ›man (Wassermann reaction negative), I noticed there was ash round the neck, more or less limited to the skin above ge of the collar of her blouse. This had been present and off for more than a year, but exactly how long the tient could not say as, although it itched rather at times, never got very bad and did not respond to anything she d done for it. On further inquiry I found she had been aring almost daily, and quite regularly during the winter, brown fur collar. This was kindly analysed for me by ›. A. L. Taylor, M.P.S., who was able to determine the esence in it of paraphenylene-diamine in demonstrable antity.

The fur, having been analysed, ceased to form part her wardrobe. She was advised to avoid all dyed r and (if tempted later) hair restorer, and a laxative was ordered. In ten weeks the hearing was normal, vertigo had ceased, appetite had returned, and tinnitus had almost entirely disappeared; the neck rash had vanished soon after leaving off the fur. There seems little doubt that the dye in the latter was the *fons et origo mali*. If so, it appears that dye in fur can, to a susceptible subject, be as dangerous as when applied to the scalp; doubtless, this was a relatively mild case of poisoning.

[1] Paul Laurens: Bull. d'Oto-Rhino-Laryng., July, 1922, oted from author's abstract, Jour. of Laryngology, 1923, xviii., p. 328.

[2] E. Watson-Williams: The Significance of Vertigo, Bristol d.-Chir. Jour., 1927, xliv., 119; Aural Vertigo, THE LANCET, 27, ii., 180.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF COMPARATIVE MEDICINE.

At a meeting of this Section held on May 23rd, with Sir D'Arcy Power, the President, in the chair, a paper on

APLASTIC ANÆMIA

was read by Dr. J. P. McGowan. It was largely an account of researches at the Rowett Research Institute, Aberdeen, on benign aplastic anæmia in pigs. He said that just as in the hyperplastic conditions there were secondary or benign anæmias on the one hand, and primary malignant anæmias—e.g., pernicious anæmia—on the other, so in the aplastic variety there were benign or secondary aplastic anæmias, such as that occurring in the pig, and malignant anæmias, such as those following benzol poisoning. In pigs aplastic anæmia seemed to arise essentially from a deficiency of iron in their milk-supply, relative to its protein content. The onset of the disease was at birth, and it reached its climax at about the third week thereafter. By this time the animals affected had become abnormally fat, "stocky," and pale; they were subject to diarrhœa, and had a heaving or pumping form of respiration. At this stage, too, they showed profound anæmia, with a colour-index of less than 1. Sudden death was common, and the chief post-mortem findings were great cardiac dilatation, and effusion of fluid into all the serous cavities of the body. Fatty change was seen extensively in the lobules of the liver, and the lungs were œdematous. The blood changes were leucocytosis, of fairly marked degree, with a good deal of anisocytosis and slight poikilocytosis. Films also showed numerous macroblasts and normoblasts. Megaloblasts were absent, but there was a marked polychromasia. Only in the last few days of the life of the pig was the skin noticeably jaundiced. In its first phase the disease seemed to be due to lack of iron, while in its second damage to the liver of a mechanical type appeared to be the determining factor. The persisting nature of the cause possibly accounted for the aplasia being more marked than in other secondary anæmias.

In discussing the changes present in this form of aplastic anæmia Dr. McGowan brought forward evidence to show that erythropoiesis was essentially, even in the mammal, an intravenous phenomenon and that the megacaryocyte, by amitotic fragmentation, played a predominant part in the production of erythroblasts from which the erythrocytes were formed. Jaundice of an obstructive type occurred as a terminal phenomenon in this condition. Nevertheless, the serum, when tested by the ordinary van den Bergh technique and reagents, gave a delayed direct and indirect reaction only. It was found, however, that dilution of the serum in buffer solution, instead of distilled water, or the use of a less dissociable acid than HCl, such as acetic acid, in the preparation of van den Bergh's No. 1 solution, allowed of an immediate direct reaction being obtained. The alcohol used in the ordinary van den Bergh technique for the indirect reaction possibly acted in the same way by lessening the dissociation of the HCl in the reagent and so affording a favourable H-ion concentration for the development of the colour change. It

seemed therefore that there was a case for reconsidering the interpretation of the clinical significance of the van den Bergh reaction.

Comparing aplastic anæmia in the pig with pernicious anæmia in the human being, Dr. McGowan pointed out that in both conditions there was general adiposity, and also a fatty change in the centre of the liver lobules. From a consideration of the facts relative to aplastic anæmia Dr. McGowan had some time ago arrived at the conclusion that there was a complementary action existing between the liver and bone-marrow in relation to blood formation, amounting almost to a single-organ activity. Subsequently Minot and Murphy had published their results on the beneficial results of liver feeding in pernicious anæmia. Feeding of liver to a pig affected with aplastic anæmia had been undertaken, with resultant very marked improvement in the blood condition. From a consideration of the liver and bone-marrow changes and the result of liver feeding in this benign aplastic anæmia as compared with those in pernicious anæmia Dr. McGowan deduced that an organic lesion of the bone-marrow was an essential condition of the pathogenesis of the primary or malignant blood conditions. Peabody, in America, suggested that in human pernicious anæmia, the giving of liver acted by causing maturation or ripening of the precursors of the red blood cells. Dr. McGowan thought that while this might be part of its action where there was deficiency of iron, it could not be its whole action in pernicious anæmia, in which the betterment consisted in a change from the embryonic to the adult blood forms. Such transformation from primitive to definitive blood type in the embryo was associated with the onset of hepatic erythrogenesis. Therefore it seemed that there was some deep-seated biological relationship between the tissues, quite apart from a ripening.

Dr. H. P. BAYON pointed out that the pig disease under discussion began with a hyperplasia of the marrow, the aplastic anæmia being the terminal symptom rather than the primary or main process. What ought to be stressed in this disease was the state of the bone-marrow. When a state of exhaustion of bone-marrow was reached aplastic anæmia supervened.

Discussion.

Dr. ALFRED PINEY said that aplastic anæmia meant an anæmia due to aplasia of bone-marrow. But he gathered that these pigs developed anæmia, and later had an aplastic bone-marrow. Normally, the name aplastic anæmia was applied to a condition in which active regeneration by the marrow as a whole was absent. These pigs, however, had leucocytosis, which was a sign of activity in the marrow. There were also other indications of activity. He therefore preferred to regard the condition as a severe secondary anæmia, in which the blood-forming organs might ultimately become aplastic. The marrow was dark-red in colour, as it was in pernicious anæmia, and was also very cellular. Photographs shown by Dr. McGowan clearly showed the existence of an advancing edge of red marrow. If it was truly an advancing condition, then "aplastic" seemed the wrong term to use. To call an anæmia which started with such a marrow "aplastic" was to invite confusion; it only became aplastic terminally. He would be interested to learn what was the effect of giving these pigs the protein-free liver extracts which were now successfully used in pernicious anæmia.

Dr. A. KNYVETT GORDON also considered that the condition was due to a proliferative change which ultimately became aplastic. Pernicious anæmia in man was a very different disease clinically from aplastic anæmia. The latter could be produced by the injudicious use of X rays in the treatment of leukæmia, and sometimes proved fatal. An aplastic condition of the bone-marrow was likewise met with in the terminal stage of sepsis. Aplastic anæmia was curable, and it must be recognised as a very different condition from pernicious anæmia.

Dr. PARKES WEBER said he considered that the sections of liver demonstrated by Dr. McGowan showed central acinous atrophy. He suggested that perhaps Dr. McGowan would work out the changes in the liver of these pigs and compare them with the various kinds of central acinous atrophy of the liver in human beings.

SUBSECTION OF PROCTOLOGY (SECTION OF SURGERY).

AT the May meeting of this Subsection, with Sir CHARLES GORDON-WATSON, the President, in the chair, Sir WILLIAM WHEELER opened a discussion on the

EARLY DIAGNOSIS OF CARCINOMA OF THE RECTUM AND COLON

by calling attention to the late diagnosis usually made, the high final mortality, and the relative frequency of cancer of the distal parts of the gastro-intestinal tract. He maintained that in just these parts an early diagnosis ought to be made for from the diagnostic point of view cancers of the distal colon were external cancers. Yet most surgeons had the same lamentable experience of late recognition. In a series of 47 consecutive cases in his own experience 24 had had carcinoma of the colon and 23 of the rectum. Of the former, half had been inoperable and of the latter only 7 had been operable. The results of early operation were very good, and the operative mortality had become negligible. The weak link in the diagnostic chain seemed to be the lack of thorough examination in suspected cases. On an average, ten and a half months had elapsed between the first consultation with a doctor and the final diagnosis. Allowances must be made for the busy practitioner when, as often happened, the predominating symptoms in early cancer of the lower bowel pointed to mischief high in the abdomen. Normally certain foods produced peristalsis; in the presence of a neoplasm accompanied by spasm of the pylorus there might be pain after food, some nausea and a little vomiting, so that a diagnosis of cholecystitis or even of displacement of the uterus might quite reasonably be made. Many cases had been X rayed for dyspepsia when the cause of the trouble lay within easy reach of the rectal finger. The number of cases mistaken for piles was notorious. Rectal examination should always be done bimanually and as thoroughly as the vaginal examination of the gynæcologist. Insufficient attention had been drawn to the simplicity of a sigmoidoscopic examination and to the means of overcoming the small difficulties encountered. The sigmoidoscope had been well described as "an elongated finger fitted with a human eye." If the sigmoidoscope were more used these growths might often be noticed in a precancerous stage. No examination was complete without a opaque meal and enema, but the general practitioner should be warned that radiologists were not miracle-mongers, nor their pronouncements akin to the gospels. It was a great mistake to take a radiologic report as proof positive of the presence or absence of a new growth; 90 per cent. of palpable growths were felt per rectum. Of growths in the sigmoid 24 per cent. were palpable, but the examiner was much more likely to feel the accumulation of fæces above the growth. Size bore no relationship to malignancy. Between a cancer and a tuberculous there was no possible means of distinguishing, and actinomycosis was only to be diagnosed when a sinus had actually discharged sulphur granules. Growths of the splenic and hepatic flexures were difficult to feel, but might be detected more easily if the patient stood up and bent forward while the surgeon examined him from behind. There was no doubt that two independent growths might be found in the same individual at the same time.

A positive benzidine test was good enough for him, said Sir William, as an indication of occult blood. A patient with a distal cancer of the intestine might remain in good health until a very late stage, if absorption was not interfered with, but growths of the right side of the colon produced marked anæmia and toxæmia even without occult blood in the stools. There was some evidence that this condition was due

the activity of the *Bacillus welchii*, and that the titoxin of this organism was of some value. næmia in a case of carcinoma of the colon was never contra-indication to operation, in contrast to tients with gastric growths in whom anæmia always eant wide local infiltration or metastasis. The ood-sugar tolerance curve was said to differ in cases gastro-intestinal cancer from that in cases of ncer elsewhere. The Wassermann test must not be glected, although he himself had never seen a icture of the rectum or colon attributable to philis. Exploration should be the last thing of all an investigation. If there were occult blood in e stools, and the symptoms were suspicious and e X ray negative, the case should be watched and vestigations repeated. If, however, there was a lpable tumour or the X ray was also suspicious, e case should be explored.

The crux of the whole problem was, however, at symptoms should make a doctor suspicious ough to insist on X ray, sigmoidoscopic, and other vestigations. Change in bowel habit was mentioned every authority. A man who had been able to t and drink what he liked insidiously became a speptic when a cancer of the stomach was developing. the same way the cast-iron regularity of the wel habit disappeared in cancer of the intestine. careful history must be taken. Age did not help ch; cancer of the rectum might appear before e age of 20, but cancer of the colon was not apt to pear early. Visible or palpable peristalsis proved at there was obstruction somewhere. The rectum s very intolerant of foreign bodies, and teasing nesmus with mucus discharge was a prominent ture of later date. There were no pathognomonic ns, only a conglomeration of factors. For the tient who would not seek medical advice and who ctored himself for his trivial symptoms nothing atever could be done.

The Help of the Pathologist.

Dr. CUTHBERT DUKES said that only in the croscopical examination of a fragment of the nour could the pathologist be of any real assistance. ere were at present no reliable means of recognising se changes in the blood which must accompany cer from the first. Alterations in the urine peared too late, and there were many other possible rces of blood in the stools. It was worth while aring in mind that innocent adenomata were quently precursors of carcinoma, and that early wel cancer was often accompanied by a cluster of sile adenomata and patches of epithelial prolifera- n of the mucous membrane. The piece removed for amination should be from the very edge of the nour, showing normal side by side with neoplastic sue. Reliance could not be placed on the rphology of individual cells; the general arrange- nt of the epithelium must be considered, together h the only infallible sign—the intrusion of a ical epithelium into regions where it was not rmally found. The piece should not be squeezed or shed or cut during removal, but should be taken by dissection or by a punch and dropped into ative as soon as possible. If the surgeon insisted an initial report from a frozen section, he must prepared for that report to be non-committal. He st also remember that the report referred only to at part of the tumour sent up for examination, and at a negative report did not necessarily mean that e whole tumour was benign. Dr. Dukes then showed eries of beautiful preparations in illustration of points that the only certain sign of cancer of e bowel was invasion of the subjacent tissues, that e superficial diameter of an ulcer or tumour was solutely no indication of the depth of its penetration, d that satisfactory specimens for examination could removed by special instruments.

The Assistance of Radiology.

Dr. GRAHAM HODGSON said that an efficient liogram could confirm suspicions, localise the owth, and define its extent. The most important signs were: filling defect, localised absence of peristalsis, and distension proximal to the stricture. To detect the more important smaller filling defects the oblique view was essential. An antero-posterior view might give the appearance of a growth at the upper end of the rectum when a complete examination would show that the trouble really lay in the sigmoid or rectosigmoidal junction, with ballooning of the sigmoid and rectum. It was impossible to exclude a filling defect until every inch had been examined in direct and oblique views, as Dr. Hodgson illustrated by slides. Another useful method was the dual exposure. The bowel distended with warm fluid showed rapid peristalsis, and if two photographs were taken at intervals of a few seconds without an intervening respiration a peristaltic wave would be recorded. Over the site of a growth the double shadow would be absent, owing to the localised absence of peristalsis. Apparent filling defects might be due to inadequate emptying of the bowel before the enema or to localised spasm. The latter could be overcome by lowering the enema can to a foot or so for five or ten minutes, meanwhile massaging the spasm, which would then gradually relax. A true filling defect might be due to adhesions. A hard inspissated mass of barium proximal to a colotomy opening was a surgical complication which might result if operation were performed within a day or two of the barium examination.

Dr. A. F. HURST said that improvement in medical education was the most important measure of all. It was appalling how late these cases reached physician or surgeon. In the vast majority the condition could be diagnosed six months earlier than it was. Warning signs were definite abdominal symptoms after a period of health, discomfort, and some change in the regularity of the bowel. In only 5 out of 25 cases in his experience had naked eye examination of the stools showed any abnormality, but occult blood was one of the most constant signs, although it might also be present in tuberculosis, chronic intussusception, and localised adhesions. It was very important to realise that in some rare cases of advanced growth the barium enema might show absolutely nothing. The shape of the filling defect helped to distinguish a growth from other conditions. Until the sigmoidoscope was recognised as being an instrument for the physician and the general practitioner, a large number of cases would be missed. In the earliest cases of all the diagnosis must be made on the history and the presence of occult blood in the stools. A patient might complain of a feeling of discomfort which was relieved when he felt gas pass through some local area with a gurgle. Now that many patients recovered from ulcerative colitis, stricture following this condition was less rare and might simulate a growth.

Mr. J. P. LOCKHART-MUMMERY said that the whole problem now came down to early diagnosis; operative results were admirable. X rays should never be taken as negative evidence, but were very useful as confirmatory. In his experience most patients would submit to an exploratory laparotomy, and he advised it in doubtful cases. The problem of getting cases early enough lay with the patient and the practitioner. The condition caused so few symptoms that patients often did not consult a doctor, and were most unwilling to submit to the unpleasant examination necessary to confirm the diagnosis. The general practitioner was realising the importance of the matter, but education of the public was very necessary.

Mr. W. B. GABRIEL suggested that annual medical examination would catch many cases early.

Mr. LIONEL NORBURY agreed with the value of routine examinations, and narrated two cases where the sigmoidoscope had revealed early growths quite unexpectedly in patients under 40 with a history of recent origin of piles. The fault did not lie with the practitioner but with the panel system which made rectal examinations quite impracticable.

Dr. CLAUDE GOULDESBROUGH confirmed Dr. Hodgson's remarks. He had overcome the difficulty

of overlapping shadows in many cases by raising the foot of the table, and having the enema pot on a level with the patient's body so that the barium trickled in very slowly. By turning the patient a little on one side the outline could be made clear. The patient's feet could then be lowered and the rectum slowly emptied, so that the sigmoidal outline appeared clear of the rectal shadow. A good idea of a small stricture could be obtained by syphoning back some of the fluid and then running it in again. Belladonna might be useful for overcoming spasm. Fixation of the colon was very important in showing that something was seriously wrong.

Mr. E. T. C. MILLIGAN said that adenoma and carcinoma might appear identical through the sigmoidoscope, but induration might be palpable. Palpation was therefore important, even if it involved opening the abdomen; otherwise a rectum might be removed for an innocent growth. No aperient or wash-out should be given before sigmoidoscopy, because this changed the appearances of the bowel contents, which were important. If normal fæces were seen through the sigmoidoscope it was some evidence against the presence of a growth higher up, and vice versa.

Reviews and Notices of Books.

TAYLOR'S MEDICAL JURISPRUDENCE.

Principles and Practice of Medical Jurisprudence. Eighth edition. Edited by SIDNEY SMITH, M.D., D.P.H., and W. G. H. COOK, M.D. London: J. and A. Churchill. 1928. Two vols. Pp. 900 and 964. £3 3*s*.

Taylor's "Medical Jurisprudence," the great classic of forensic medicine, has for 50 years been indispensable to two professions. At the present time a new edition is of peculiar value, since medico-legal questions of importance are under discussion and the relations of doctor and lawyer are in a critical stage of transition. The eighth edition maintains all the traditions of the book, while it keeps abreast of modern research and controversy. The last decade has seen legislative activity in many directions which concern medical men; to mention only a few statutes, the Coroners' Act, the Births and Deaths Registration Act, the Legitimacy Act, and the Midwives' Act, were the work of a single year. The new edition refers to many notable cases of recent times, such as Beard *v.* Director of Public Prosecutions, Rex *v.* Bateman, Rex *v.* Armstrong, and Rex *v.* Kynaston. Advances in medical and ancillary sciences have caused many changes in medico-legal technique, and have necessitated revision of the chapters on identification, injuries to the head, and injuries from fire-arms, among others. There is a good deal of new material in the section on fire-arms, describing the characteristics and identification of bullets and weapons. The chapter on bloodstains has been considerably altered; the guaiacum test is described, but is regarded as obsolete since the introduction of simpler colour tests with benzidine, phenolphthalein, and other bases. The action of these depends on the fact that there is a substance, probably a peroxidase, in the colouring matter of the blood which, in the presence of hydrogen peroxide, transforms them rapidly through oxidation from colourless bases to coloured salts. The benzidine test, which is perhaps the most satisfactory, consists of the application to the suspected material of a 10 per cent. solution of paradiamo-diphenyl in glacial acetic acid, to which has been added twice its volume of hydrogen peroxide. If the stain is due to blood, a deep blue colour immediately radiates out on to the filter paper on which the test is performed. Other substances (sputum, pus, and certain bacteria.) give a positive reaction, but never such a rapid one. This test, like all similar ones, is chiefly of negative value, and further examination is necessary to prove the presence of hæmoglobin. In spite of the advances which have recently been made in the study of blood groups, the precipitin test is still made the principal means for identifying human blood, and the possibilities of the agglutination test are regarded with caution. The toxicological sections have been largely rewritten, and the analyses made on Mr. Armstrong, Mrs. Greenwood, and the victim of the Seddons are given in full.

The department in which most alteration has been necessary is that dealing with the legal position of the insane. Several judicial pronouncements and the results of certain trials, notable that of Ronald True, have thrown the question of criminal responsibility in mentally disordered persons into prominence and in each profession a body of opinion is advocating revision of the rules in McNaghten's case. The findings of the Lord Chancellor's Commission of 1922 are given in full, with impartial comment on the different views expressed by various medical and legal authorities, especially on the question of impulse. The use of the word "insanity" where the earlier edition gave "lunacy" marks a step forward. The wood-cuts of the early editions were nearly all omitted from the fifth to make room for more letter-press, and because Hofmann's "Atlas of Legal Medicine" illustrated the book better than its own pictures could do. Now, illustrations have appeared again, chiefly in the sections on identity and wounds, and they are certainly welcome. The format of the work is much improved by the innovation of neat, dark-blue covers and a clearer fount for the cross and side headings and for the index words in the table of contents.

TUBERCULOSIS.

Modern Aspects of the Diagnosis, Classification, and Treatment of Tuberculosis. By J. ARTHUR MYERS, Associate Professor of Preventive Medicine, Medical and Graduate Schools, University of Minnesota. London: Baillière, Tindall and Cox. 1927. Pp. xii.+275. 25*s*.

Dr. Myers remarks in his preface that "nothing is so mischievous in the campaign against tuberculosis as the notion that only a small group of physicians are competent" to diagnose and treat the disease. He has therefore endeavoured to gather together facts concerning the tubercle bacillus, and the diagnosis, treatment, prognosis, and prevention of tuberculosis, which may be quickly grasped and applied alike by the student and the practitioner of medicine. A study of tuberculosis intended for students should be concise, well illustrated, and so arranged that a reader with little experience to guide him in his selection can readily distinguish between matters of vital and those of only minor import. In these respects, and particularly in the last, Dr. Myers's book is not wholly satisfactory, but the practitioner will read with interest and profit a book which traces the history of tuberculosis from the days of Hippocrates to those of Trudeau, and provides much information of value concerning the pathology, symptomatology, and treatment of the disease. The best chapters are those devoted to the general management of the tuberculous patient and the principles upon which treatment, whether carried out at home or in the sanatorium, should be based. In this country the provision of treatment for the tuberculous has limited the responsibility of the private practitioner who is apt to feel that his duty ends when a patient has been "duly notified" as tuberculous. The patient whose name is on the sanatorium waiting-list is often advised to "get as much fresh air as possible," and may spend his time in walks which entail considerable exertion at a time when every hour of rest would increase his frail chance of recovery. The words of Dr. Hawes, of Boston, which Dr. Myers quotes, are the statement of a truth that is sometimes forgotten: "the patient's stay at the sanatorium is but an incident in a course of treatment, the most important parts of which are before the patient enters and particularly after the patient has left the sanatorium." Dr. David Stewart

as crystallised the modern theory in the statement hat "the medicine called exercise must be prescribed n exact doses and marked with a poison label." Most f the instruction given by Dr. Myers is sound, but n occasion he ignores the general needs of the atient. Thus in his zeal for thermometry he forgets ne desirability of sound sleep and advises that the atient's temperature should be taken "every two ours throughout the 24 hours" for a period of a w days.

Not all the illustrations in the section on Radiology re convincing. The picture designed to demonstrate ne appearance in a radiogram of a tuberculous cavity ils to show one, and a similar criticism applies to a gure referred to as illustrating the cone-shaped nadows described by Dunham. A printer's error as apparently transposed the descriptions of the two ictures of pulmonary exudate in process of absorption. he student is advised that he must "try to differenate between true intrapulmonary cavities and leural shadows which may be localised pneumonaces or localised pleurisies," but the author omits explain how this differentiation is to be made. wo chapters are devoted to brief descriptions of odern surgical methods, including artificial pneumonorax, phrenicotomy, and thoracoplasty, and a apter on heliotherapy gives a short account of this ethod of treatment. The statement that "splendid" sults are obtained by the use of X rays in the eatment of lupus should not pass unchallenged. alignant disease has not seldom resulted from the plication of the rays to this condition.

HE BASIS OF SENSATION.

By E. D. ADRIAN, M.D., F.R.S., Fellow of Trinity College, Cambridge. London: Christophers. 1928. Pp. 122. 7*s.* 6*d.*

THE work described in this interesting little volume purely physiological, although an application of ne results obtained to problems of mind is by their ery nature invited. Here Dr. Adrian hesitates to ead, content for the moment to consolidate the ains acquired by physiological technique.

It has long been known that for practical purposes ne impulses set up in motor nerves (isolated for xperimentation) by electric stimuli represent the ssential activity of such nerve-fibres in the living ody. These impulses are momentary disturbances assing along the fibre to the accompaniment of hanges in electric potential; owing to the interposition of a phase or period of a refractory character ne impulses are discrete, even if extremely rapid, nd a continuous transmission of the state of excitation impossible. The question for consideration set imself by Dr. Adrian was whether sensory fibres ould be found to behave differently—work done ong this line has hitherto been comparatively anty and to some extent inconclusive. By means an ingenious use of the capillary electrometer and new amplifier (based on technical improvement those in use for wireless purposes) he has been ble to study the action currents excited in sensory erves; equally ingenious is his method for emonstrating these in a single sensory fibre. He olated a strip of the sterno-cutaneous muscle of the og, eventually obtaining a preparation in which nly one muscle-sense end-organ (muscle spindle) as present. From this delicate little piece of tissue e was able to prove that on stimulation the muscle eceptor (sensory end-organ) discharges a regular iscrete series of impulses when stimulated, and that ich differences as exist between the activity of ensory end-organ and of sensory fibre, registered ectrically, are quantitative and not qualitative. he impulses in sensory fibres are of precisely the me type as those already familiar in motor fibres—conclusion which is clearly of high significance. he author's next research was to compare the sensory ischarges from various types of receptor, and for is he tested pressure end-organs in one of the toeads of the cat, touch organs in the same, movement of a hair in the cat's ear, pain organs in its foot, and, further, visual receptors in the eye of the eel. From the standpoint of electrical result the fundamentally important conclusion is reached, that there is no specific activity in sensory nerves corresponding to each type of sense organ; the nervous impulse is common to all, and to the motor nerve-fibre.

Since then, sensations differ while sense impulses do not, differentiation is a central and not a peripheral phenomenon. The significance of the fact that identical discharges are found in the optic nerve can be expressed in a word; connecting fibres within the central nervous system communicate by impulse-discharges of the same type as those in the peripheral fibres. As Dr. Adrian quietly remarks, "there is nothing very startling in this conclusion, but it is satisfactory to have reached it." As for the relation of sensory nerve impulse to central sensation, of physical current to change in consciousness, here at once we find ourselves in deep water again. Dr. Adrian shows, with precision, that the intensity of sensation at any moment is directly proportional to the frequency of impulses in sensory nerve-fibre, but the underlying relationship remains undetermined. With scientific modesty and suspension of judgment, he declares that the gap between stimulus and sensation is not yet bridged—it is only a little narrower than it was before.

VAGOTONIES, SYMPATHICOTONIES, NEUROTONIES.

Second edition, entirely recast. By A. C. GUILLAUME. Paris: Masson et Cie. 1928. Pp. 562. Fr.40.

THE first edition of this work was reviewed in our columns appreciatively some considerable time ago; this second edition is more than twice as long (562 pages instead of 250). Doubtless such an extension represents a real accretion to knowledge of the sympathetic system, in health and disease, but it is curious how much of this is still characterised by assumption and speculation, by probabilities and not by certainties. Dr. Guillaume recounts at great length the clinical aspects of vago-sympathetic disequilibrium, and inserts new chapters dealing with its interrelation with blood conditions, and on the psychical phenomena accompanying this disorder of balance, inclusive of the neuroses. The book is replete with information of the most diverse kinds, and its bibliographical references leave nothing to be desired. Closely printed, and at the same time readable, it reveals its author's erudition and clinical flair on almost every page. Suggestive as are many of his conclusions, we still are conscious of the impression that pathological confirmation of these has been in various instances outrun, and that the fundamental basis of advance in exact knowledge requires much more attention than has hitherto been assigned it.

TECHNIQUE OF SWEDISH MEDICAL GYMNASTICS.

By Dr. J. ARVEDSON, Director of Arvedson's Gymnastic Institute, Stockholm. Translated by MINA L. DOBBIE, M.D., B.Ch., Medical Officer, Chelsea College of Physical Education. London: J. and A. Churchill. 1927. Pp. 259. 12*s.* 6*d.*

THOSE interested in physical treatment will welcome this little book. It is essentially a reproduction of the chapter by Dr. Arvedson, which appeared in "Kleen's Massage and Medical Gymnastics," first published in this country ten years ago; such additions as have been made are all to the good, and the volume provides an authoritative account of Swedish remedial gymnastics. There are certain criticisms which will occur at once to the English reader. Sherrington's work on the action of muscles is not, we think, given adequate prominence. Space devoted to the performance of various exercises in which the attention of two gymnasts is required might have been spared for more theoretical instructions; for, in this country, at least, exercises of this type are a luxury not easily attained, and many

of those given are of doubtful utility. Furthermore, the student in training will have to supplement this book by others, various important exercises being omitted; for example, Klapp's crawling exercises merely receive mention as a desirable form of exercise in the treatment of scoliosis, no details being given. But the profuse illustrations are clear and well produced, and the index is well compiled. The addition of a list of recognised abbreviations would add to the value of future editions. Dr. Dobbie has provided an excellent translation, for which students will be grateful.

THE HISTOLOGY OF SKIN DISEASES.

Histobiologie der Plant. By JOSEPH KYRLE, Prof. Dermat., Univ. Vienna. Vienna and Berlin: Julius Springer. 1927. With 176 illustrations, mostly coloured, in the text. Pp. 287. Unbound, R.M.42.

THE author of this admirable work, the first volume of which we reviewed two years ago, died after a long illness, in May, 1926. He was regarded as one of the most promising of the younger school of dermatologists in Vienna, and was the author of many original monographs. It is generally deplored that he did not live to complete the third volume of the series of lectures which would have dealt with the histology of cutaneous tumours. This collection was edited by his colleague, Dr. von Planner, and has earned the commendation, in a short preface, of the severely critical chief of the clinic, Prof. E. Finger. Each volume contains 35 lectures, and in this group we are introduced to the inflammatory groups of dermatoses, acute and chronic, which include syphilis, tuberculosis in its many forms, Delhi sore, leprosy, lymphogranuloma, and mycosis fungoides. The colloquial style of presentation, reinforced by the superb coloured drawings of actual microscopic slides. will be appreciated by dermatologists and pathologists the world over. Theoretical explanations of the complex processes that underlie the morbid histology of individual diseases are not lacking. Discussions of such subjects as the effect of a virus on nerve-endings, or on the capillary reaction and permeability, show how fundamental and far reaching are the biochemical problems yet to be solved in dermatology. Of particular interest and importance are the paragraphs on the herpetic groups, and on the so-called "dermotrophic" viruses, and on the latest theories of sensitisation. which last section forms a prelude to the introduction of a dissertation on eczema. The differences between simple and chronic inflammatory reactions are well brought out in the lectures on tuberculous and "meta-tuberculous" affections, in which latter group are included lupus erythematosus and granuloma annulare. In the succeeding chapter, the meaning of such phenomena as "allergy" and "anergy" are discussed, and also the function of the skin as an immunising organ. The general arrangement of these lectures follow the classical lines of the Hebra school; there is a good index, and the reference to the literature proves most painstaking reading and memorisation.

Under the title "Die Blutgefässe der Menschlichen Haut und Ihr verhalten Gegen Reize" a German translation has been published of Sir Thomas Lewis's book on "The Blood Vessels of the Human Skin and Their Responses," reviewed in THE LANCET of May 19th. The authorised translator is Dr. Erich Schilf, extraordinary professor in the Physiological Institute of the University of Berlin. The publishers are S. Karger, Berlin, and the price is 24 marks for a bound copy.

Crawford W. Long and the Discovery of Ether Anœsthesia.—This book, by Frances Long Taylor, which was the subject of annotation in THE LANCET of March 17th (p. 566), is now issued in this country by Humphrey Milford, Oxford University Press, at the price of 18*s*.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE.—The first article in the April issue, although short, is important. In it E. L. Collis and J. C. Gilchrist deal with the effects of dust upon coal-trimmers. They show that these workers suffer rather less than most men from tuberculosis, but distinctly more from bronchitis and pneumonia. Radiographs exhibit signs similar to those widely regarded as characteristic of silicotic fibrosis. The authors point out that the "snow-storm" variety of shadows in radiographs can only be regarded as diagnostic of silicosis when found among workers exposed to a silica risk; they may and do occur among workers exposed to other dusts which do not predispose to tuberculosis. The point is important, especially as compensation for silicosis may shortly be granted to coal-miners exposed to a silica hazard in driving hard headings. The other two articles which make up the number are reports from the Engineering Committee of the American Conference on Electric Shock. The first deals with statistics of fatalities due to electric shock in the United States and Canada, in England, and in Switzerland. The figures show a much lower incidence in England and Wales than in the other two countries, while the rate for the United States is above that for Switzerland. Electricity is more used in the other countries than in England, but not to an extent sufficient to account for the much higher rates. The second article analyses 265 electrical accident cases dealt with at electric supply plants in America with regard to the Schäfer method of resuscitation. This subject is referred to on p. 1130 of our present issue.

May, 1928: Poisoning by arseniuretted hydrogen arising when pickling metal sheets, and due to accidental presence of arsenic in the acid used or in the metal, is well discussed by C. W. Muehlberger, A. S. Loevenhart, and T. S. O'Malley. The paper is chiefly of value on account of a complete bibliography of cases of arsine poisoning. The second contribution is by A. R. Riddell and H. E. Rothwell, who deal with certain aspects of silicosis as seen in Ontario. Of especial interest is a table giving the silica content of 19 different lungs; it varied from 39·8 per cent. of silica in the ash of dried lung from a driller of silica stone to 0·6 per cent. in the case of an ordinary city dweller. Excellent plates illustrate radiographs of the chest, and the macro- and micro-scopical appearance in three of these cases of definite silicosis.

Reports and Analytical Records.

GOLD LEAF BRANDY (No. 1).

(J. DENIS HENRY MOUNIÉ AND CO., COGNAC.)

ON analysis this brandy, which is stated to be 20 years old, gave the following results:—

Alcohol, by volume	46·12 per cent.
Proof spirit	80·75 ,,
Alcohol under proof	19·25 ,,
Extractives containing sugar	0·93 ,,

Secondary products expressed as parts per 100,000 of absolute alcohol:—

Acidity (acetic acid)	26
Aldehydes	22
Furfural	2·5
Esters as ethyl acetate	108·5
Higher alcohols	200·0

These results support the claim that the brandy is a pure product of the grape. It has not been blended with neutral spirit. The aroma is good and the palate agreeable. The brandy is a suitable and economical one for medicinal purposes, and when recommending its use, it should be borne in mind that it is stronger than many other brands, the customary strength in this country being 40 per cent. of alcohol which is equivalent to 70 per cent. of proof spirit.

THE LANCET.

LONDON: SATURDAY, JUNE 2, 1928.

THE TREATMENT OF CRIME.

ON May 21st the House of Commons went into Committee of Supply on a vote of £473,969 for the expenses of prisons in England and Wales. The date is significant, for on May 21st, 1780, one was born who was to give her life to making our prisons what they are in process of becoming—centres for the reformation of the criminal, hospitals for the cure of crime. When ELIZABETH FRY paid her first visit to the female ward at Newgate in 1813 she found it "a den of wild beasts; women, cursing, fighting, dancing, screaming over their games of cards; all idle; all contaminated for ever by the foul smell of the dungeon." Prisons in those days were "verminous dens where staring wretches lay in irons on filthy pallets of straw," and though in our own time these institutions have their defects, the revolution in their management already seems astounding. No less an observer than Prebendary CARLISLE, of the Church Army, writing to the *Times* a year ago, maintains that "with their training schemes, their concerts, their sermons, their games, the prisons have in 30 years reduced their daily populations from over 30,000 to less than 11,000, and the prisons from 66 to 33." The very word "cell" has been abolished, and solitary confinement has disappeared in the most advanced of our institutions; "warders" and "prisoners" are now "officers" and "men"; pictures, flowers, and curtains adorn the forbidding interiors; and in each the most treasured of all possessions, a library, with scores of books and papers, is installed. In the course of the debate, Sir VERNON HENDERSON, Under Secretary to the Home Office, was able to reply, in answer to questions, that every effort was made to improve the accommodation at prisons, and their recreation and workshop facilities; that every step was taken to see that where clothing was handed over from one man to another it was thoroughly and properly disinfected, and that in no case was it in a condition where it could convey any disease to anybody; that there was no reasonable ground for complaint on the score of prison diet which had been very considerably improved, particularly in variety; and that the problem of alcoholism was largely non-existent so far as the prison population was concerned.

To those familiar with prison administration these remarks may seem a commonplace; to others they will be reassuring. But certain other statements in the Under Secretary's reply require serious consideration. Sir VERNON said that arrangements are now being made by which persons regarded by the prison medical officer as possibly mental defectives are transferred to a prison especially adapted for their needs, or where special treatment is given, as at the prison at Birmingham. This seems to suggest that certain prisons are being set apart for the training of mental defectives—a suggestion which we must comment upon. The tendency to-day is to group prisoners together in large establishments; thus Holloway is the women's prison for no less than 17 counties. Similarly, we understand that prisoners exhibiting mental symptoms are sent for observation to certain prisons where special facilities exist. Parkhurst is one of these, Birmingham another. Here ascertained mental defectives should be certified, and transferred to the care of the Board of Control in Lunacy. Under the principal Mental Deficiency Act (1913) many of these mental defectives could not be certified; the Act of 1927, however, removed those difficulties, and it became the duty of the Prison Commissioners to see that they were no longer kept in prison. There are, however, certain prisoners who can neither be certified as insane nor dealt with as statutory mental defectives, yet are incapable of being treated as ordinary prisoners because they are (so to say) non compotes mentis. Of such persons, 77, according to the latest returns, are recorded as being in prison, where they receive special treatment in a separate institution. It is these prisoners to whom Sir VERNON HENDERSON referred as "mental defectives." Mental defectives undoubtedly they are, but they ought not to be thus confused with those to whom alone this specific statutory term applies—namely, those who are certifiable under the Mental Deficiency Acts. While there is reason to hope that certification of prisoners under this Act is satisfactorily carried out, it must be remembered that the conditions which make it necessary are far from ideal; as Mr. RHYS DAVIES pointed out in the debate, mental defectives should be detected before being sent to prison rather than after. He recalled the recommendation of the Departmental Committee on the Treatment of Young Offenders, that observation centres or central remand homes should be provided by the State in convenient places for the examination and observation of all young offenders. He had seen something of such work in Belgium, and was satisfied that nothing was more hopeful in the whole of Europe. He referred, of course, to the observation centre for lads at Moll, and the similar centre for girls at Namur, which are idealised remand homes where children between 7 and 21 years of age are sent for special study and classification. Under free and natural conditions each child is encouraged to reveal himself, and his particular tastes, abilities, and proclivities are ascertained. After careful individual study the treatment is prescribed—home, foster parents, State school or special institution. The beginnings of a similar system exist in England. At the Boys' Prison at Wandsworth are collected all the lads remanded from the London area, and all those who have been committed to Borstal institutions. Mr. RHYS DAVIES drew attention to the good work that was being done at this centre, where the careful medical and psychological examination of each child is supplemented by inquiries into his home circumstances by a group of voluntary women workers. Here again, as the result of these studies, some of the boys are placed on probation, others certified as mentally defective, and others sent for training to Borstal institutions at Portland, at Feltham, or near Rochester, according to their needs, for each of these institutions is specialised for different groups of delinquents.

All these institutions, both here and in Belgium, deal with the young offender as such, what time

the prisons zealously endeavour to reform the adult criminal. But the future is with the prevention of delinquency rather than with the treatment of crime, the causes of which are often to be found at a very early stage in the life of the individual. The mental health of all children, therefore, should become the intelligent care of each community; all character deviations and mental abnormalities should be early detected and early corrected to avoid the waste of good citizens and the tremendous expense of criminal repair that is our present portion. In that prophylaxis lies the hope—indeed, the purpose—of the mental hygiene and child guidance movements.

ASPHYXIA.

THERE are three principal causes of acute asphyxia: drowning, electric shock, and the inhalation of poisonous gas or vapour. The increasing ease with which town populations can reach bathing-places makes the tale of drowning accidents longer every summer; the second risk is increasing with the growing industrial and domestic use of electricity, and the third has become much greater since motor vehicles came into popular use. It is, therefore, becoming more and more necessary for the practitioner to be certain in his mind of the methods he will employ when confronted with asphyxia. Artificial respiration immediately occurs to the mind of doctor and first-aid worker alike, and the Schäfer prone-pressure method[1] has proved so successful of recent years that it has almost superseded all others. The patient's air-passages are cleared as well as possible, and he is laid prone on the floor with one arm bent and the other extended, and the face turned to the side. The operator kneels astride the thighs and places his hands on the lower ribs. He compresses the thorax by leaning forward on his straight arms, and releases the pressure by swinging back. Inspiration and expiration should last about two seconds each. So much every first-aid worker knows, but while artificial respiration is undoubtedly the corner-stone of treatment for asphyxia the doctor is properly expected to offer more skilled help than the layman, and there are other very important facts to be remembered.

Drowning, to quote a recent and able summary of the position by Dr. C. K. DRINKER,[2] is, as far as is known, a relatively simple form of asphyxia, and when the mouth and nose have been cleared of obstruction the Schäfer method is all that remains to be done. Nerve cells die at different rates when deprived of a regular supply of oxygenated blood. The small pyramidal cells of the cerebrum die, he says, in eight minutes, while the spinal cord and sympathetic ganglia may last for an hour. Complete immersion in a healthy person does not cut off the oxygen supply completely, and the chances of recovery depend on the great viability of the medullary centres. It is necessary, of course, to lose no time before starting rescue measures, but a healthy individual has a good chance if artificial respiration is commenced, even after 15 minutes. Dr. DRINKER does not recommend drugs for drowning, or indeed for any form of asphyxia. Alpha-lobelin he stigmatises as inefficacious and dangerous. Caffeine sodiobenzoate may have some effect if given intravenously, and can do no harm, but the doctor may safely leave his hypodermic case at home. When electric shock is the cause of the asphyxia, perseverance is the keynote of treatment. It cannot be too widely known that death from electricity is usually no more than apparent death. Artificial respiration should be begun immediately and continued for several hours, for no form of asphyxia yields such a good recovery-rate. Lay workers are instructed to continue their efforts for four hours; recovery is common after three hours and has even occurred after eight. Electricity may act primarily on the circulation, so that respiration continues for a few minutes after the shock and then ceases; in such patients the heart is probably in fibrillation and the prognosis is bad. Generally, however, the current paralyses the respiratory centre while leaving the circulation normal, and the patient may recover his breath after hours of apnœa. All the evidence warns us against declaring patients dead unless heart sounds and pulse are entirely absent after a long period of prone pressure respiration; they turn cyanotic and regain colour as treatment proceeds. To combat the rise of intrathecal pressure which sometimes occurs, Prof. S. JELLINEK recommends lumbar puncture.[3]

Asphyxia caused by carbon monoxide poisoning introduces an entirely different factor, as Prof. HAMILTON HARTRIDGE pointed out in a lecture reported on p. 1137 of our present issue. The asphyxia resulting from inhalation of coal-gas, motor-car fumes, or the effluent from badly ventilated gas and anthracite stoves, is chiefly due to the affinity of the monoxide for hæmoglobin, so that oxygen is excluded from the blood. This chemical effect calls for oxygen inhalation to assist the starved tissues. As the respiration is depressed in the late stages, 5 per cent. of carbon dioxide should be added to stimulate the respiratory centre. Prof. HARTRIDGE also suggested the exhibition of sodium cyanide for this purpose. Artificial respiration should, if possible, be performed with the oxygen-carbon dioxide mask in place,[4] and it is important that the oxygen be administered as early as possible, for the damage done by oxygen-want is, as we have said, directly proportional to time, and it is possible that a patient may recover from the asphyxia and yet be permanently crippled in cerebral function. It should, however, be remembered that high concentrations of oxygen are dangerous to the lungs if given continuously for long periods, and the oxygen should be replaced by air and carbon dioxide as soon as the real urgency has passed. All carbon monoxide should have left the blood after an hour and a half. Another useful way of supplying oxygen to the tissues is by transfusion, but this must be done early. Finally, a valuable hint, that does not always occur either to doctor or layman, is that the nearest gas-works will probably provide trained help and suitable inhalation apparatus more efficiently and promptly than any hospital.

THE EVOLUTION OF A HERESY.

THE heresy of one generation becomes the orthodoxy of the next. Prof. ERNST KRETSCHMER, known in this country by the translation of his work on "Physique and Character," contributes an important article to the *Deutsche Medizinische Wochenschrift* of April 13th on Further Developments of Psycho-therapeutic Technique, especially of Psycho-analysis. He begins by noting that whoever, as a bystander, might seek to form a judgment from the theoretical

[1] Harvey Lectures, 1907–1908. J. B. Lippincott Company.
[2] Jour. Amer. Med. Assoc., 1928, xc., 1263.
[3] Wien. Klin. Woch, 1928, May 3rd, p. 622.
[4] Booklet of American Gas Association, Lexington-avenue, New York.

discussion for and against psycho-analysis that has been carried on in past years would find himself in hopeless confusion. On the one side he would see an organisation that resembled not only a scientific alliance but a religious sect, inasmuch as it expelled dissenters who in turn built up hostile daughter sects; on the other side he would see a small group of critics who, seizing upon its weaknesses and errors, too hastily reached a caustic repudiation of the whole psycho-analytic movement. This condition of affairs was, says KRETSCHMER, the reflex of the storm that productive new thoughts are wont to raise at their first appearance; but it is now becoming a thing of the past, for the younger generation of psychiatrists knows nothing of the artificial antithesis between analyst and non-analyst. As a contrast to the old theoretical discussions he points to the work of independent investigators like von BLEULER, HOFFMANN, HOMBURGER, KRONFELD, and J. H. SCHULTZ, who, starting with no blind acceptance of the views of FREUD and his school, have subjected the psycho-analytical thesis to purely empirical clinical tests with resulting judgments that trend clearly and uniformly in one direction. Whilst exercising definite criticisms of some weighty points, these authorities see in the nucleus of the Freudian method one of the most valuable foundation-stones of a modern psychotherapy, and in its fundamental results—besides untenable or too paradoxical formulations—a wealth of psychological insight as well as empirically sound knowledge of mankind. The personal experiences of KRETSCHMER and his colleagues lead to the same generalisations and are likewise productive of criticisms that arise from actual observations and bear no taint of prejudice or a priori reasoning. His own methods are eclectic and he disapproves of those who analyse "according to Freud" or "according to Adler," for he believes that whoever has at heart the good of psychotherapy and psychiatry will set forth what is valuable in the teachings of the different analytical schools, and that the important fraction of psychotherapists who still group themselves into sects must incorporate their work with the general body of medical psychology. KRETSCHMER here pictures a process of evolution that is taking place, though more slowly, among ourselves in this country. Here, as elsewhere, there has been a separation of psycho-analysis from the general body of medicine and even of psychiatry, and the separation seems to have been accepted by analysts as well as by their opponents. Although psycho-analytical conceptions, after more than thirty years of strenuous opposition, are increasingly finding acceptance outside the circle of whole-hearted Freudian adherents, and although the day of futile theoretical discussion has almost passed, yet these conceptions, it must be admitted, are not yet handled with that freedom that should characterise scientific work and without which adequate clinical discussion is impossible. If let alone this state of things would eventually right itself, but KRETSCHMER'S work indicates the need for a change in the present point of view that acquiesces in the isolation of psycho-analysis. The scope and limitations of analysis, its successes and failures, the applicability of particular methods, the use of psycho-analytical knowledge apart from actual analysis—all these and many other problems will sooner or later force themselves upon medicine and will only find solution in frank and unhampered discussion; and in the interests of psycho-analysis itself there is urgent need of that informed criticism which is the breath of life to any developing theory.

Annotations.

"Ne quid nimis."

DISABILITY DUE TO RESPIRATORY DISEASES.

OUR knowledge of the incidence of most forms of disease has for its basis statistics of mortality. Statistics of morbidity, except in the case of infectious diseases, are extremely meagre, and for many non-lethal illnesses non-existent. From the public health standpoint, but much more from the economic and industrial point of view, mortality figures may leave quite erroneous impressions as to the relative importance of various causes of invalidity and of the hygienic problems requiring most urgent attention. The "captains of the men of death" are not necessarily in the commissioned ranks of the factors which at present preclude the attainment of the highest possible level of human health, efficiency, and happiness.

In a recent issue of THE LANCET,[1] the importance of respiratory diseases, in particular bronchitis and pneumonia, as causes of mortality, and the influence and difficulties encountered in the accurate evaluation of various ætiological factors have been clearly emphasised by Miss Hilda M. Woods. The position occupied by affections of the respiratory tract among the causes of morbidity and the relative frequency of different kinds of respiratory disease causing disability form the subject of an important paper recently published in the Public Health Reports of the United States Public Health Service by D. K. Brundage.[2] The paper deals with the statistics of invalidity caused by respiratory diseases among employees of the Edison Electric Illuminating Co. of Boston, and also those collected by a group of industrial sick benefit associations. The records from the former source include all disabilities lasting one working day or longer, and are therefore of prime importance in giving us a true insight into the frequency of minor illness; the latter include only those cases of illness causing disability for eight consecutive days or longer. It was found in this investigation that, roughly, half of the total number of absentees and half of the total time lost by employees were due to respiratory illnesses. The common cold, which accounts for 71 per cent. of the total diseases of the respiratory system, is by far the worst offender, being six times as common as tonsillar and pharyngeal affections, eight times as frequent as influenza, and more than 20 times as frequent as bronchitis. In spite of the shorter average duration of invalidity resulting from colds, the great excess of cases of this condition puts it an easy first in the causation of the total number of days lost in industrial employment. Practically all cases of colds are of less than eight days' duration, as is seen when the records of sick benefit associations, which exclude illnesses of less than eight days' duration, are examined. In this collection of data common colds entirely drop out of the morbidity picture. The difference between the total annual absence rate of 564 per 1000 men, and the absence rate of 43 per 1000 due to illness lasting eight consecutive days or longer shows how vast a proportion of all respiratory diseases last for a week or less. The seasonal variations in mortality from affections of the respiratory tract are almost parallel to those of morbidity, in which the minimum occurs in July and a maximum in February. A point of some interest is revealed by a comparison of the seasonal curves of all respiratory illnesses irrespective of duration and of those lasting for eight days or more. From this it would appear that attacks of respiratory sickness having their onset in late winter and early spring tend to be more prolonged than those which

[1] Woods, H. M.: THE LANCET, March 17th, p. 539.
[2] Brundage, D. K.: Public Health Reports, U.S. Health Service; March 16th.

begin in the early part of winter. This observation may be taken to represent a lower degree of resistance to respiratory infections among industrial workers towards the end than at the beginning of winter. The seasonal variations in the incidence of common colds and influenza are much greater than in either diseases of the pharynx and tonsils or bronchitis and pneumonia. As in the mortality statistics presented by Miss Woods, so also in these morbidity statistics, one of the striking features of respiratory diseases is the great geographical divergence in the rates of incidence. These wide differences both in frequency and severity demand adequate explanation before successful prevention or control can be expected. These statistics show very clearly how relatively infrequent are the fatal forms of respiratory disease, and that the apparently trivial disability, the common cold, not in itself dangerous to life, is yet the disease probably most inimicable to national prosperity.

SEPTIC INFECTION IN A MATERNITY HOSPITAL.

AN unusually conclusive and satisfactory investigation into the causation of a curious epidemic occurring in a maternity hospital is recorded by Dr. R. Marshall Allan, Director of Obstetrical Research, University of Melbourne, and Dr. Lucy M. Bryce.[1] In July of last year Dr. Allan was requested by the medical officer of health of a Melbourne municipality to look into the circumstances surrounding the deaths of a mother and two infants and a serious infection of a third infant, all of whom had been inmates of a private maternity hospital of high standing. Six practitioners had brought the matter before the municipal authority, and the matron of the hospital had agreed to refuse admission to patients until the investigation was completed. The maternal death had occurred two months after delivery which took place on April 9th, 1927, in a woman whose early puerperium was normal. She was allowed up, in the private hospital, on the twelfth day after delivery and on the fourteenth developed a temperature of 103° F. and a pulse-rate of 100. Four days later (April 27th) the temperature was 105° F. and the pulse-rate 120, and the patient was sent away to the Women's Hospital acutely ill and semi-delirious, with abdominal pain, but no tenderness or rigidity. Hæmolytic streptococci were isolated from the blood, and in spite of injection of mercurochrome and a blood transfusion death supervened on June 4th, 1927. Post mortem, the uterus was found to be small, the appendages apparently normal, and no sign of thrombo-phlebitis in the pelvis could be detected.

The room occupied by this patient when at the private maternity hospital was disinfected and the mattress destroyed; no other patient was admitted to it until five weeks after her removal, after which it was occupied by two mothers recently delivered, and their infants. One of the infants (G.), though discharged apparently well 12 days after birth, developed a swelling of the vulva associated with inguinal adenitis; over 40 abscesses formed in various parts of its body, but eventually it recovered. Another infant (N.), born a week later than G. and nursed in the same room, developed a swelling of the right ankle and cellulitis of the thigh, and subsequently died. A third infant (M.), born three weeks after N. and housed in a different room, died five weeks after birth from septic infection. On bacteriological examination of the blood cultures taken from the woman patient, a hæmolytic streptococcus was found, and an organism showing similar and rather unusual characteristics was recovered and isolated in pure culture from one of the abscesses occurring in infant G. Material from the other infants was not available, but a report was received that examination of the pus from one of them (N.) revealed streptococcal infection. The next step in the investigation was a search for a carrier of virulent streptococci among the five doctors and four nurses who were considered to be possible sources of infection. From the naso-pharynx of one of the nurses an organism was obtained which was identical in cultural and morphological characteristics with the strain of streptococcus isolated from the patients. Descriptions in tabular form of fermentation tests and of mouse inoculations are given; there seems to be no doubt that the organism was highly pathogenic. The nurse, on further examination, was found to have pus in the left maxillary antrum, which was evacuated, and the organism was recovered also from this material. She was suspended from duty pending further examination and treatment.

Most interesting questions arise in connexion with this epidemic. Inspection of the hospital and the methods in use revealed no defects in management or aseptic technique. The previous case records were entirely satisfactory. The nurse had been in constant contact with obstetric patients and babies in the same hospital for four months, but no septic infections occurred prior to those under investigation. The possibility that patient and nurse were infected from a common source is regarded as unlikely since there was no history of acute onset or of symptoms in the relevant period. As to the mode of infection of the woman patient, this remains obscure. The omission to which the authors themselves draw attention, to take intra-uterine or cervical cultures from this patient, is regrettable on this account. The lateness of the onset of the septicæmia in the case points to a puerperal rather than an intra-partum infection. Even more puzzling than the channel whereby the organism gained entrance to the body is the escape of other women who were in the charge of the same nurse from either intra-partum or puerperal infection. The nature and mechanism of defence against infection during and after parturition is a subject on which our knowledge is still very limited, and anomalies such as are revealed in this careful study are likely to carry us further than investigations confined to local pathological conditions of the breast or uterus.

[1] Medical Journal of Australia, March 31st, p. 390.

READING AND SPELLING.

THE condition known as word-blindness, a more or less complete inability to learn to read and to spell, comes occasionally under the notice of practitioners, particularly those engaged in school services. The original idea that it was a form of feeble-mindedness was soon abandoned in favour of Hinshelwood's suggestion that it was due to a congenital defect or development of a small area in the temporal lobe of the cerebrum—a theory which has become generally accepted in medical circles. Dr. Samuel T. Orton of Ohio, who has made many studies of speech defects, throws out a new theory. The weakness of the accepted view, he holds, lies in the fact that no necropsy reports are yet available, and that the parallelism of symptoms found in cases of congenital word-blindness and in those of acquired word-blindness does not necessarily prove similarity of lesions, since destructive lesions of the speech zone do not prevent acquisition of speech, other areas being apparently allotted to the purpose. He made a special survey of 15 cases whose backwardness in reading was very marked, as compared with their progress in other subjects and their general intelligence. Their intelligence quotients, measured on the Stanford scale, ranged from 71 to 122 in spite of the special difficulty with certain tests caused by the reading disability. They all had normal vision and could easily call up visual memories of objects and pictures. The failure was in the associative linkage between words visually presented and the corresponding concept. Now it has been found that, at the associative level of the cerebrum, destruction of one hemisphere may cause loss of the associative function and inability to read (acquired word-blindness), while

[1] Jour. Amer. Med. Assoc., 1928, xc., 1095.

destruction of the other hemisphere does not produce this result. Visual records of only one side are used in symbolic association. Yet the inactive side is as well developed as the other, and must have been "irradiated equally with the active." This would leave some record in the cells of the inactive side, an engram which would be opposite in sign and would form a mirrored pattern. May it not be, then, Dr. Orton asks, that while normally only one of these paired engrams is in activity, in these abnormal cases under consideration the habit of suppression of the other engram has not been established and hence the difficulty in differentiating between "p" and "q," and "d" and "b," "was" and "saw," and the tendencies to mirror-reading and mirror-writing which he found in his cases to be characteristic of the condition? The theory is fascinating, but not quite convincing, apart from the difficulty of proving it, which is as great as in the case of the theory it is proposed to supplant. The possibility of its truth depends upon the correctness or otherwise of Dr. Orton's claim that the "tendency to reversal in the direction of reading" is the cardinal factor of the condition. The confusion of letters like "p" and "q" is one which probably few children escape at an early stage, and mirror-writing has been a well recognised curiosity of development, usually of short duration, in many normal children, and of longer duration in some feeble-minded children. These facts may seem to support Dr. Orton's theory that the condition which he names strephosymbolia is a physiological variant, but mirror-writing does not appear to have been a factor in some recorded cases of word-blindness. He admits that only one of his 15 cases "fits the measure" of Hinshelwood's congenital word-blindness, and his estimate that 2 per cent. of school-children are affected with strephosymbolia confirms the suspicion that he includes cases that do not even approximate to word-blindness, which has in England been estimated to occur in 1 out of 2000 children. The mirror-engram theory also fails to explain the difficulty with other letters and words, a difficulty which Dr. Orton somewhat cursorily sets aside as of slight importance. Certain new training methods based upon the theory are being carried out upon some of the children; the results of these, when they are available, should be of much interest.

PSYCHOLOGY OF ANÆSTHESIA.

IN a lecture recently delivered at the Royal Dental Hospital [1] Dr. Dudley Buxton discussed the psychological aspects of anæsthesia, a matter as obscure and little studied as it is practically important. If the essential causes of difficulties and dangers that arise both in early and in late stages of narcosis were better understood it would probably be found that the root of the trouble is often psychological and not physical. Every anæsthetist is familiar with some of the phenomena that may arise through what is spoken of as the "mental" or "psychological" disposition of his patient. The anæsthetist knows that an abnormal reflex activity even during deep narcosis, or an extraordinary amount and degree of excitement in the light stages, may characterise the unconscious state of the "temperamental" patient. In other subjects of the same kind narcosis may leave a peculiar and abiding effect, so that for weeks or months after its induction the patient's ordinary sleep is attended by vivid and distressing dreams which were first originated by the inhalation of an anæsthetic. Dr. Buxton alludes to the well-known instances in which shock, even fatal shock, has occurred at the beginning of an administration, even before any anæsthetic at all had been inhaled by the apprehensive subject. It is very plain, therefore, that what is called the "psychological" side of anæsthesia has a direct and powerful influence on the effects of anæsthetic administration, and this influence is possibly even more determinant when a local analgesic is employed than when there is unconsciousness. It is, however, the play of the "psychological" factor during unconsciousness that is so interesting, so dominating, and, further, so hard to investigate. Animal experimentation is here likely to be of little guidance as to human behaviour, for we are dealing with that very part of the organism in which the higher is most differentiated from the lower animal. Subjective evidence, too, is only partially reliable, for the memory of what has taken place when the brain was still under narcotic influence is necessarily imperfect.

[1] British Dental Journal, 1928: XLIX. 405.

IS THERE A RACHITOGENIC DIETARY FACTOR?

WE are accustomed to think of rickets as a deficiency disease brought about by a lack of vitamin D or by an insufficiency or unbalance of the calcium and phosphorus in the diet. E. Mellanby (1925,[1] 1926 [2]) believes that there is, in addition, a substance, occurring chiefly in cereals, the presence of which renders the foodstuff containing it actively rickets-producing, and that when the substance has been removed the same diet has no ill-effects. P. M. Holst (1927 [3]) adduces evidence in support of Mellanby's idea. He shows that rats develop rickets when they are fed on an exclusive diet of oats or yellow peas, or wheat or rye, or barley or maize, or polished rice. Pure starch does not produce the effect; rats are able to live on it for some time, and develop only an osteoporosis. An addition of casein and lard makes the animals live longer and grow, and rickets is not produced, but when the casein and lard are added to the diet of pure oats or other pure foodstuffs rickets is not prevented. Holst found that he could extract the rachitogenic substance by boiling oatmeal with a dilute solution of hydrochloric acid; the extract, when filtered and neutralised and given to rats, in a daily dose corresponding to 15–20 g. of oatmeal produced rickets in rats on the pure starch diet. The substance is organic since the ash of oats does not possess the rickets-producing power; it is dialysable and can be precipitated with alcohol, but Holst's results are not entirely in agreement with Mellanby's as to the physical and chemical behaviour of the rachitogenic substance.

Recently A. F. Hess and M. Weinstock (1927 [4]) have made the startling suggestion that cow's milk contains a rachitogenic substance and that the more of the milk an infant receives the more likely it is to develop rickets. Much in their paper is unsupported assertion: they state, for instance, that an infant of six months, receiving a quart of milk, is more likely to develop rickets than one of the same age receiving a pint, but they bring no figures in support of the statement, nor do they dispose of the objection that an infant of six months, receiving only a pint of milk would be under-caloried. Rickets is a disease which requires active growth, in order to show itself in a florid form, and growth is unlikely to be active if the supply of calories is much too low. As to details, Hess and Weinstock start with the premiss that human milk is more preventive of rickets in the human infant than is cow's milk, because they have found that in new York, in March, all bottle-fed infants, unless they have received some special specific therapy, are suffering from some degree of rickets. Only one-half to two-thirds of the breast-fed infants are found to suffer in this way. Hess and Weinstock, therefore, set out to discover whether the difference is due to the superiority of human milk in the antirachitic factor. When they tested the antirachitic value of cow's milk and of human milk on rats, they found that 20–25 c.cm. of the former were needed to prevent rickets, while 25–30 c.cm. of human milk were needed. This result showed that the human milk tested was of very poor antirachitic potency for rats, whereas Hess and Weinstock make

[1] Med. Res. Council Special Report Series No. 93.
[2] Proc. Phys. Soc., Jour. Physiol., 1926, lxi.
[3] Jour. of Hygiene, 1927, xxvi., 437.
[4] Amer. Jour. Dis. Child., 1927, xxxiv., 845.

the assertion that breast milk is of high antirachitic potency for infants. They therefore conclude that "the high protective value of human milk in infantile rickets cannot be ascribed to its content of the antirachitic factor." If it were due to abundance of the antirachitic factor, they argue, rickets would have been prevented in rats, in a smaller dosage than that found necessary. When they made experiments on rats with the cream of cow's milk, they got into yet more difficulty. They used 20 per cent. cream and top-third milk, but they did not get as good results with the top milk as with the cream, although the doses of fat given were supposed to be identical. From this slender piece of evidence Hess and Weinstock conclude that there is an actual rachitogenic factor in the skim fraction of the top milk, which offsets the antirachitic value of the cream contained in it, and presumably accounts for the inferiority of cow's milk to human milk for the prevention of rickets in human infants. The animal experiments are very few in number, and if such an important conclusion was to be drawn from them it would have been advisable to supply actual estimates, showing that the same amount of fat was given to both sets of rats.

The conclusions which Hess and Weinstock draw may be correct, but evidence is lacking that their whole premiss, that human milk is so much superior, is not false. They tell us that all the infants on cow's milk and a large proportion of those on breast milk get rickets. Some breast milk is therefore superior to cow's milk as an antirachitic for infants, but some from their own admission, is not. Clinical evidence should certainly have been included to show that the breast milk tested on rats was derived from the mothers of non-rachitic infants, and not from the mothers of rachitic ones, who admittedly existed in the community in large numbers. Hess is too well known a pediatrician for this communication to be disregarded, but the reasoning is difficult to follow, and some of the necessary data have not been published. The evidence offered is certainly not sufficient at present to warrant the inclusion of milk among the substances which contain a positive rachitogenic factor, but evidence seems to be accumulating that cereals do contain such a factor.

NORMAL VARIATIONS IN THE CEREBRO-SPINAL FLUID.

IT must be admitted that the examination of cerebro-spinal fluid is often disappointing. The pathologist feels that he should be able to do more with what has been so hardly won; was not the first clinical sample obtained by laminectomy? The specific changes are rather few, and if we agree that the fluid varies within the limits normally stated, many organic lesions of the central nervous system seem to leave it unaffected by their presence, and therefore of but little use in diagnosis. Greater precision is desirable if possible, and Dr. Axel Neel[1] has therefore done a service in analysing 6000 successive cases in which the C.S.F. was examined. He finds—and most pathologists will agree with him—that the normal maximal number of cells per cubic millimetre is not, as conventionally stated, five, but is in fact not more than one. Moreover, his 800 normal cases never showed a total albumin value (as estimated by the Brandberg-Stolnikow-Bisgaard method) exceeding seven, and it rarely exceeded six. In order to count cells with such accuracy, a chamber of exceptional depth and area is necessary to obviate errors of multiplication. Dr. Neel claims that he was unaware of the clinical diagnosis until after the examination of the fluid; but he was, perhaps, a little fortunate in never coming across those specks of dust, epithelial cells, or even red blood cells, or blood leucocytes from needle trauma which worry other pathologists, and might have ruined his series. He finds the gold-sol test of no differential value; here again most observers will agree with him. Pandy's test, in which C.S.F. is dropped into saturated aqueous phenol, he regards as the most reliable crude test for excess globulin. He rightly insists that much useful information may be lost by failing to do accurate counts and accurate albumin estimations. Particularly is this true in the differential diagnosis between hysteria and organic lesions of the central nervous system. It is remarkable what a large proportion of syphilitic patients without clinical nervous lesions fall just outside normal values both in cell count and albumin content. Of late there has been a tendency among physicians to demand quantitative instead of qualitative estimations of C.S.F., and there is no great difficulty in meeting the demand. There is, however, no Fuchs-Rosenthal counting chamber of adequate dimensions on the English market at present. Dr. Neel's chamber has double the usual volume.

[1] Münch. med. Woch., April 27th,

IMPACTION OF THE WISDOM TOOTH.

THE reason why the third molar tooth is so apt to lead to trouble in the lower jaw is that the mandible is rarely large enough to accommodate this tooth even when it is normally situated, and the lack of room leads frequently to its misplacement. When the eruptive impulse results in impaction against the tooth in front, infection in the bone and soft tissues is likely to ensue, and the position of the tooth favours the spread of such infection along cellular planes backwards, downwards and upwards, into dangerous areas. The lay public is so ready to attribute any pain or swelling of the upper or lower jaw in adult life to a wisdom tooth, however that practitioners are apt, after glancing into an apparently normal mouth, to search for less obvious sources of pressure or inflammation. In the lower jaw especially, however, attempted eruption of the third lower molar can give rise to most unpleasant results, and superficial inspection without a radiogram is not sufficient to exclude its presence in an abnormal or impacted situation. The dangers of neglect to take a radiogram are exemplified by two cases recently described by E. Polloson and M. Dechaume in the *Presse Médicale*.[1] The first case was that of a girl of 18, who had a large swelling at the angle of the jaw accompanied with much pain. The condition had existed for over a year. There was no history of inflammation and the growth, at first soft, had become progressively harder. A surgeon diagnosed a periosteal sarcoma of the mandible; he operated and removed a large mass of fibrous tissue which, when examined microscopically, showed no signs of malignancy. The wound healed well, but the swelling soon returned, increased in size and invaded the mouth, leading to trismus. Radium was applied intrabuccally but with no result beyond that of causing ulceration of the mucosa followed by the establishment of a discharging sinus at the base of the coronoid process. The surgeon advised further operation of a more extensive character but, fortunately for the patient, at this stage a radiogram was taken. The alveolar plates of the mandible were seen to be expanded and lying between them was a deformed, unerupted third molar. In the maxilla, on the same side, both the second and third molars were misplaced, so that normal eruption was impossible. It was evident that the swelling and trismus were due to infection round these teeth. The patient came under the care of Prof. Tixier, who operated and with much difficulty removed the impacted teeth. The trismus and swelling speedily subsided, though some permanent deformity remained. The second case recorded was equally instructive. A woman of 58 had suffered from excruciating attacks of facial neuralgia on the left side for over 20 years. The slightest draught brought on an attack and the patient spent most of her time in bed in a warm atmosphere. In 1924 the neuralgia became more

[1] A propos des accidents graves liés à l'éruption vicieuses la Dent de Sagesse, Presse Médicale, April 11th.

localised and seemed to arise from the left side of the mandible. Gradually a swelling manifested itself at the angle of the jaw accompanied by signs of inflammation and leading to a progressive trismus which eventually became complete. The patient was by this time very emaciated and her mouth extremely foul. At this stage, for the first time, a radiogram was taken; it showed a lower third molar lying almost horizontally, a zone of rarefaction round it indicating the existence of a chronic osteitis. Under general anæsthesia Prof. Tixier made an external incision and removed the tooth. Both neuralgia and trismus completely disappeared. These cases illustrate the wide variety of clinical signs which may follow impaction and infection of third molar teeth. In neither was the dental origin of the condition at all obvious, nor could it be easily inferred from the history or the physical signs. If a radiogram had been taken at any early stage the girl could have been spared a mutilating operation and the mental anguish consequent on the belief that she had malignant disease; the woman could have been cured earlier of the neuralgia which had crippled her life for 20 years.

NOTIFICATION OF VENEREAL DISEASE IN NEW SOUTH WALES.

IT is difficult to draw solid conclusions from the recently published report of Dr. Robert Dick, the Commissioner under the Venereal Diseases Act in New South Wales. The report is included in the annual report of the Director-General of Public Health and deals with the year 1926. During that year there were 6001 notifications, an increase of 687 on the number notified in 1925. The increase is attributed to the issue of a circular to medical practitioners at the end of 1925, directing attention to their legal responsibilities and duties under the Act. The Act intentionally placed the duty of notification upon the doctor. Dr. Dick seems to think that his statistics are incomplete for reasons which are familiar in this country. Some medical practitioners think notification inherently futile or at least useless as a precaution; some find it too much trouble; some act as if "the least said the better." The statute provides that notification shall be by number not by name. Even the address of the patient is withheld, but if he fails to continue under treatment until cured, it is provided that his name and address shall be forwarded to the Commissioner for necessary action to ensure resumption of treatment. Here the figures are instructive. During 1926 the Commissioner thus received the names and addresses of 1060 patients who had defaulted from treatment. Of these 280 resumed in response to representations, 187 cases were still under investigation at the end of the year, and the rest (the majority of the total) could not be traced. Of course, as Dr. Dick suggests, many may have been visitors from overseas, from other States, or from country districts, and may be under treatment elsewhere. Still it is hard to resist the conclusion that in Australia, as in this country, patients are prone to give false names and addresses. The proportion between the sexes remained roughly the same in syphilis notification in 1926 as in previous years—namely, about 3 males to 1 female. There was a difference in the proportion in gonorrhœa; for 1923, 1924, and 1925 it had been roughly 10 males to 1 female; in 1926 the ratio was 7·84 males to 1 female. The New South Wales statistics clearly confirm the fact that venereal disease is a problem of large cities. The notification figures are striking in this point. The metropolitan area with a population of little more than 1,000,000 accounts for over 5000 notifications. The rest of the State with a population of scarcely 200,000 more had only 387 notifications. Dr. Dick does not think that venereal disease is spread in Australia by commercialised vice. Professional prostitution does not exist on a large scale, but there is sexual promiscuity in the big cities where people find themselves free from gossip and criticism and where they go to have a good time and spend their money. Perhaps the most disquieting feature in the report is the rise in the number of female children and young girls suffering from gonorrhœa. The total of these in the age-group up to 20 years was 135 in 1924 and 153 in 1925, but in 1926 it rose to 268.

SURGICAL DIATHERMY OF THE TONSILS.

REMARKABLE differences of opinion are to be found in the published literature concerning the use of diathermy for removal of tonsils. On the one hand, G. B. Massey [1] states that "the consensus of opinion of those applying the method skilfully is that these applications should replace tonsillectomy in the great majority of cases," while, on the other hand, Novak [2] considers that "the very severe reaction, the great pain, the toxæmia, and the extreme discomfort of the patient, are sufficient reasons for condemning the method." In a moderate and well-considered review of the subject, Dr. E. W. Frecker [3] comes to the conclusion that this difference of opinion is due, as might well be expected, to difference of technique. He believes that the bad results arise from the use of too heavy a current for too long a period, and from the employment of too large an electrode; and he is of opinion that the reaction cannot be sufficiently limited by the ordinary method of bipolar coagulation, and that a button electrode should never be used in these cases. Dr. Frecker claims that the monopolar method, often termed electro-desiccation, and causing drying of the tissues over a very limited area, is far more suitable for the treatment of tonsils, and describes the technique. As electrode a needle is used, insulated by a rubber-covered glass tube, so that only $\frac{1}{4}$ in. projects for insertion into the tissues. Applications are made once a week, to each tonsil alternately, about six sittings being required. Anæsthesia is secured by painting the region with a 10 per cent. solution of cocaine, and it is said that the treatment is almost free from pain both at the time of application and afterwards. The needle is inserted for $\frac{1}{8}$ to $\frac{1}{4}$ in., the current is applied until a white ring appears, and the process is repeated until the whole of the tonsil is white, which entails 12 or 15 punctures, according to the size of the organ. If any bleeding should occur, it is checked by raising the electrode from the surface and allowing the current to spark on to the bleeding spot. The after-treatment is to use a simple mouth-wash; the reaction, says Dr. Frecker, is limited to a little soreness on the next day, and the sloughs come away piecemeal without trouble; the result is an undistorted fossa, without sign of fibrous tissue or contraction. The method is not suitable for children, but is indicated for hæmophiliacs and for those whose state of health makes tonsillectomy dangerous.

THE Croonian Lectures of the Royal College of Physicians of London will be delivered at the College at 5 P.M. on Tuesday the 5th, Thursday the 7th, and Tuesday the 12th of June by Dr. Charles Bolton. His subject will be "The Interpretation of Gastric Symptoms."

THE death occurred on May 28th, at the age of 86, of Dr. George Edward Shuttleworth, for many years medical superintendent of the Royal Albert Institution, Lancaster, and the author of numerous works on mental deficiency.

Dr. Abraham Flexner, who recently delivered the Rhodes Memorial lectures at Oxford, has resigned his position as Director of Studies and Medical Education of the General Education Board of the Rockefeller Institute. He proposes to devote his time to writing on university education in Europe and America.

[1] Practical Electrotherapeutics and Diathermy. New York, 1924.
[2] Quoted by A. Hollender and M. Cottle: Physical Therapy in Diseases of the Eye, Ear, Nose, and Throat.
[3] Med. Jour. of Australia, March 17th, p. 336.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXVIII.

TREATMENT OF CANCER OF THE BLADDER.

It is fortunate that cancer of the bladder is comparatively rare, as there is no organ in the body where malignant disease gives rise to more intense suffering. Vesical neoplasms only form about 0·5 per cent. of all new growths, and about half of them are malignant. Approximately two-thirds of the bladder tumours are found in the male, the age-incidence being 50 to 70. A large proportion of vesical carcinomata arise from villous tumours of the bladder which have undergone malignant degeneration. It is probable that most of these growths ultimately become malignant if untreated, but in a few instances removal of an apparently benign growth has been followed by a definitely malignant recurrence. I have never seen this type of recurrence when the original growth was fulgurated.

Several types of cancerous tumours are found in the bladder. They are the villous carcinoma, the scirrhus, the squamous-celled, and the adeno-carcinoma. Of these the scirrhus form is in my opinion the most malignant. The villous form, when malignant from the start, and not the result of changes occurring in a papilloma, is likely to remain localised for a considerable time, and the operative results are good.

The postero-lateral wall is by far the most common site for all tumours of the bladder. The next most common site is the anterior wall, while they are comparatively rare on the vault. Recurrences are located at the site of the original growth, in the suprapubic scar, or in the aveolar tissue of the pelvis.

Changes in the kidneys and ureters are mechanical and infective. If the tumour compresses the lower end of the ureter the kidney and the upper part of the ureter become dilated from back-pressure. A hydronephrosis or a pyonephrosis is formed according as the urine is sterile or infected. Once cystitis sets in the patient is liable to attacks of ascending pyelonephritis, which may prove fatal. Renal infection is in my experience the most common cause of death after operation.

Symptomatology.

It is impossible to distinguish between the symptoms of a benign and a malignant tumour of the bladder in the earlier stages. It is only when the bladder is infected and the growth advanced that distinguishing symptoms appear. The first and most common symptom is an intermittent, painless hæmaturia. As a rule it lasts for two or three days, and then gradually the urine becomes clear, remains so for weeks or even months, when a similar attack occurs. As a rule, during the earlier attacks the blood is fluid; if clots are found they are small. If the hæmorrhage is profuse, larger clots form, which give rise to pain and difficulty in micturition, and even occasionally to complete retention. In this case they must be washed out through a large catheter, and if this is impossible a suprapubic cystotomy must be performed. The hæmaturia is always terminal; that is, more blood is present in the last portions of urine passed than in the first, and this test serves to distinguish between a vesical and a renal hæmaturia. The presence of large numbers of epithelial cells from the bladder in pus-free urine is highly suggestive of a neoplasm.

Sooner or later cystitis sets in and entirely changes the clinical picture. There is then marked frequency of micturition both by day and night. The act is always extremely painful, the pain increasing in intensity till it culminates in a particularly painful spasm when the bladder is empty, and a few drops of blood are expelled. The bladder capacity is much reduced. As a rule there is no difficulty in micturition unless clots are passed. In the later stage the urine becomes blood-stained and is very foul. It is not usual to find recognisable portions of the tumour in the urine in malignant tumours, although they are frequently observed in benign growths.

Although hæmaturia is a prominent symptom in most cases of vesical carcinoma, blood is sometimes present only in microscopical quantities. A chronic relapsing cystitis is highly suggestive of malignant disease of the bladder, and cystoscopy should not be unduly delayed in these cases.

In the later stages of cancer of the bladder the patient's general condition rapidly deteriorates. Death is usually due to exhaustion or pyelonephritis. If the growth is malignant from the start the duration is often less than a year, and rarely longer than two years. When a benign growth takes on malignant characters the duration of the disease is increased.

Diagnosis.

The diagnosis can only be made by cystoscopy while the patient is still in the operable stage. If the growth is palpable, either on hypogastric palpation or on bimanual examination with a finger in the rectum and the other hand pressing the abdominal wall downwards, it is inoperable. Occasionally an operable growth can be felt on vaginal examination, but in the male a palpable growth is always inoperable. Early cystoscopy is the only means of reducing the proportion (now over 60 per cent.) of growths inoperable when first seen.

The cystoscope enables one not only to determine the presence of a vesical tumour, but also its position and nature, and in most cases its operability. If long and thin villi are easily set in motion by currents in the fluid contained in the bladder, and the whole growth is moveable, it is almost certainly benign. If the villi are short and thick, the stalk thick and rigid, and the whole growth fixed, it is definitely malignant. Irregular puckering, or nodules, appearing in the mucous membrane surrounding the base of the growth are indicative of a submucous infiltration. It is often exceedingly difficult to detect early malignant changes, and if there is any doubt, it is safer to assume that the growth is malignant.

A malignant tumour involving the internal meatus is usually unsuitable for operation: a growth—one situated on the postero-lateral wall—can be removed as a rule provided there is sufficient margin of healthy tissue between it and the internal meatus; resection, and reimplantation of the ureter, does not materially increase the risk. If the growth involves both ureteric orifices, operation is contra-indicated. Large growths can be removed from the vault or anterior wall of the bladder.

Nodular growths are much more liable to infiltrate the bladder-wall laterally than the villous type. As a rule operation is unsatisfactory if the growth is more than 2 in. in diameter at its base.

The cytoscope gives no indication if the growth has spread into neighbouring organs, or is involving the lymphatic glands. The first step in the operation is thus always exploratory.

Operative Measures.

The best method of treatment is excision. This involves an extensive resection of the whole thickness of the bladder-wall. The large gap left is closed by a line of continuous sutures passing through the whole thickness of the bladder-wall.

If the growth is situate near the ureteric orifice, the space between the bladder and the lateral wall of the pelvis is first explored. If the glands along the course of the internal iliac artery are enlarged, hard, and matted together no operation can cure the patient, but if they are only slightly enlarged, and still soft, the operation should be proceeded with. The ureter should be isolated, and a strip of gauze passed round it for future identification. The bladder is then opened, and the growth encircled by an elliptical incision. Any bleeding points are clamped and tied. The large gap in the bladder wall is then sutured from below upwards by means of a continuous catgut suture; this procedure is not easy to carry out. The upper end of the ureter is either implanted into the incision, or is brought through a small puncture in the bladder-wall and sutured in place. Both the bladder and the pelvis

are drained. After these large resections the cavity of the bladder appears to be very small, but it soon recovers its normal capacity.

Total cystectomy is rarely performed; not only is the disposal of the ureters a difficulty, but if the growth is too extensive for excision the lymphatics are already involved, and the operation is followed by a retro-peritoneal recurrence.

Palliative Measures.

Even when the lymph glands are involved, a resection may relieve the patient entirely of his bladder symptoms, and he may live the remainder of his life in comparative comfort. If the growth cannot be resected, it may be destroyed by diathermy, applied through a suprapubic opening. Radium seeds should then be implanted round its margin. The disadvantage of this operation is that the sloughs may take a long time to separate, and the suprapubic fistula may have to be kept open for several months. The implantation of radium into the growth may be followed by a diminution in the amount of hæmorrhage and a slight amelioration in the patient's symptoms, but I have never succeeded in causing the complete disappearance of the neoplasm. I have only employed radium in advanced and quite inoperable cases; it forms a useful adjuvant to diathermy. I have twice seen recurrences in the abdominal wall entirely disappear under deep X ray therapy, but I have not seen any successes when the growth was actually in the bladder. If deep X ray therapy is employed, the patient's blood should be examined at frequent intervals; if the polymorpho-nuclear leucocytes fall to 2000 per cubic millimetre, the treatment must be stopped. A suprapubic cystotomy does little to relieve pain. The chief indication for this operation is severe hæmorrhage with clot retention. A certain amount of relief may be obtained by turning both ureters out on to the skin, so as to deviate the urine.

Medicinal Measures.

The pain of advanced vesical carcinoma is intolerable, and can only be relieved by morphia. A suppository of morphia and belladonna should be given every night, and a mixture containing hexamine and tincture of hyoscyamus taken in the day time. Hexamine is the best urinary antiseptic provided the urine is acid. If it is alkaline the reaction is usually due to the presence of a urea-splitting organism. In this case it cannot be rendered acid by the administration of acid sodium phosphate or other drugs, and either sandal-wood oil, or hexyl-resorcinal should be substituted for hexamine. Most patients cannot stand bladder irrigation; it usually increases the vesical irritability, but if it can be tolerated it helps to keep down sepsis. Dilute solutions of silver nitrate (about 1 in 10,000) are most efficacious, but if this cannot be tolerated, boric lotion should be substituted for it. Injections of small amounts of antiseptic fluids into the bladder are better tolerated than irrigations. About 5 cubic centimetres of a 20 per cent. solution of gomenol in oil may be injected every other day through a small soft catheter, and left in the bladder. The patient should have a plain easily digested diet. Alchhol, spices, and condiments should be forbidden. Plenty of bland fluids, such barley-water, Contrexèville or Vittel water, &c., should be taken. It is a mistake to restrict the intake of fluid, for micturition is usually less painful if the urine is dilute.

Results.

The operative mortality following resection is about 10 per cent. In my own cases it was nil when the bladder was not infected, and 12 per cent. when infection was present, but as the latter cases greatly exceeded the former, the total mortality was approximately 10 per cent. The late results are surprisingly good. Sir J. Thomson-Walker has found, on following up his cases, that over half of them remained free from recurrence, some for as long as 15 years.

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Special Articles.

CARBON MONOXIDE GAS POISONING.*

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1. *How Carbon Monoxide Gas produces Poisoning.*

Carbon monoxide (CO) poisons by chemically combining with the hæmoglobin within the corpuscles and thus reducing the oxygen-carrying power of the blood. It also probably combines with the hæmoglobin present in muscle. The effects of this are not known. It has been proved in high concentrations to affect the action of certain oxidising ferments in some seeds and insects. It is not known whether it produces similar effects in man. It is thought by some authors to have a specific action on the central nervous system because of the intensity of the headache and dizziness.

2. *The Acute Symptoms of Carbon Monoxide Poisoning.*

These are in a mild case, increased circulation rate; increased depth and rate of respiration; headache and dizziness; nausea (sometimes vomiting); muscular weakness; dilated pupils, and a flushed face. In a severe case the symptoms are decreased circulation-rate; loss of consciousness; convulsions, and a pale face. In a fatal case they are usually stoppage of respiration followed by stoppage of the heart. During the mild symptoms the oxygen want produced by the carbon monoxide is compensated (*a*) by increased circulation-rate; (*b*) by increased lung ventilation; (*c*) by vaso-constriction in viscera and muscles (shown by nausea and muscle weakness). This vaso-constriction is probably partly nervous due to the vaso-motor centre, and partly chemical due to adrenalin in the blood; this also causes the large pupils.

3. *The Amount of Carbon Monoxide in Air which Produces Poisoning.*

There is no definitely fatal amount of carbon monoxide (CO) in air since pure carbon monoxide gas could probably be breathed for a very short time without causing any symptoms. The evidence available indicates that two factors are concerned: (*a*) the quantity of carbon monoxide in the air, and (*b*) the time during which this air is breathed. (Tables I. and II.)

TABLE I.[1]

Percentage CO in air breathed.	Time for symptoms to develop.	
	Mild.	Severe.
0·01	—	—
0·02	5–6 hrs.	—
0·03	3–4 ,,	4–5 hrs.
0·04	1½–2½ ,,	2½–4 ,,
0·05	1–2 ,,	2–3 ,,
0·06	¾–1½ ,,	1½–2 ,,
0·08	30–40 mins.	40–80 mins.
0·10	10–30 ,,	30–60 ,,
0·15	3–15 ,,	15–45 ,,

TABLE II.[2]

Percentage CO—		
In air breathed	In actual hæmoglobin after ½ hr. breathing.	Calculated in hæmoglobin at saturation.
0·06	15	46
0·135	20·5	66
0·18	29·5	72
0·30	36·6	81
0·60	53	90

15 per cent. CO in blood caused noticeable throbbing in the head. Headache and nausea above 25 per cent. approximately. Loss of consciousness at about 53 per cent. Roughly if the CO percentage in air multiplied by time of exposure in minutes equal 1 there may be just noticeable symptoms (and there may be about 10 per cent. CO in blood) (see Table II.). If, when multiplied together they equal 5 mild symptoms may

* Based on a lecture delivered on May 17th at St. Mary's Hospital Institute of Pathology and Research.

be replaced by severe ones (and blood may be about 30 to 40 per cent. saturated). Mice and other small animals killed by coal gas are usually found to have about 80 per cent. CO in their blood. In a fatal case in which a chauffeur was poisoned by a car exhaust, the blood was stated to contain 58 per cent. CO.[3] A given percentage of CO in air is more dangerous to men performing active work than to men at rest. It is also more dangerous to men respiring deeply than to men with shallow breathing. It is also more dangerous to mammals with a high metabolic rate than to mammals with a low—i.e., babies may be more susceptible than adults.

4. *Carbon Monoxide in Coal Gas.*

The danger of poisoning is partly due to the carbon monoxide gas, which varies. Values between 9 per cent. and 18 per cent. are common. The smell of coal gas, which may act as a warning of its presence, cannot be always relied on, for the following reasons: (1) some people cannot smell it at all; (2) the olfactory mucous membrane tires, thus giving the impression that the gas has been dissipated; (3) the amount in the air may rise so slowly that the olfactory mucous membrane is not stimulated. The danger of coal-gas poisoning occurs in connexion with leaky taps, pipes, and water seals, &c. The amount of CO is increased if to ordinary retort coal gas "water" gas is added. This water gas is manufactured by passing steam through red-hot coke, the products being principally hydrogen and CO. The addition of water gas to coal gas is quite common. The danger of poisoning from the CO contained in coal gas is enhanced by the presence of irrespirable gases, the amount of these latter varying from 60 per cent. to 70 per cent. The explanation is that when a mixture of air and carbon monoxide gas is breathed there is competition between the oxygen of the air and the carbon monoxide for the hæmoglobin in the corpuscles. If the oxygen tension is decreased relatively more CO is able to effect combination. The presence of irrespirable gas by lowering the oxygen tension facilitates the entry of the carbon monoxide and thus increases the risk of poisoning. Carbon dioxide gas (CO_2) is also present in coal gas; values 2·5 and 3·5 per cent. are common. In men and animals, carbon dioxide, which stimulates the respiratory centre, may increase ventilation and thus facilitate the access of carbon monoxide to the blood passing through the lungs. This factor is probably of small importance since the amount of CO_2 in ordinary coal gas is small, but it becomes of increasing importance in gaseous mixtures, to which reference will be made, where much higher percentages of CO_2 are met with. Because of the irrespirable gases and the CO_2 in coal gas its toxicity is roughly double that which its CO content alone would suggest.

5. *Carbon Monoxide in Producer Gases.*

Various other combustible gases are made and used in commerce; the analyses of some of them are given in Table III.

TABLE III.[4]

Type of gas.	Percentage of certain gases by volume.				
	H_2	CH_4	CO	CO_2	N_2
"Blue" water gas ..	52·0	1·0	38·0	4·5	4·5
Carburetted water gas ..	35·0	13·0	32·0	4·5	5·5
Mond gas	27·5	2·0	11·0	16·5	43·0
Dowson gas	20·0	1·0	24·0	6·0	49·0
Suction ,, ...	16·0	—	34·0	3·0	47·0
,, ,, ...	16·0	2·0	22·0	6·0	54·0
Blast furnace gas ..	3·0	1·0	26·0	9·0	58·0
Coke oven gas	53·0	35·0	6·0	2·0	2·0

The danger of these gases is largely due to the carbon monoxide which they contain, but this, as explained above in Section 4, is increased by the presence of irrespirable gas and of CO_2. In addition, some of these gases are without odour.

6. *Carbon Monoxide in the Products of Incomplete Combustion.*

Whenever charcoal hydrocarbons or other chemical substances containing carbon are burned with insufficient air carbon monoxide is largely to be found in the gaseous products of combustion. Sometimes the air is restricted intentionally in order that the gases produced may reduce—e.g., some metal ore present. In other cases the restriction is not intentional but is unavoidable, as, for example, in an anthracite stove. In others, again, it is accidental—for example, a gas stove with a closed air inlet.

This classification is not always very easy to apply, so that I have grouped these cases together as follows: Carbon monoxide may be found in the gaseous products from (*a*) engines burning coal, coke, anthracite, wood, alcohol, paraffin, petrol, benzole, coal gas, producer gas, petrol gas, &c.; (*b*) stoves, furnaces, or flames burning any of the above. The presence of CO in these products is naturally not dangerous of itself, but only when as the result of certain circumstances the products are respired by men or animals. For example, an anthracite stove may be correctly installed and used. As the result of a cowl jamming the wind causes a draught down the chimney. In consequence the products of combustion fill the house. Gas cookers (kitchen ranges) are frequently fitted without any direct ventilation.

Carbon monoxide may enter the room (*a*) as a result of faulty burner design or adjustment; (*b*) accidental stoppage of orifices or displacement of parts; (*c*) accidental firing at the gas inlet (firing back); (*d*) a cold surface in contact with the flame may cause it to go out before complete combustion has been obtained.

7. *Carbon Monoxide in other Gases.*

These form a miscellaneous group which may be classified as follows: (*a*) Natural gases—e.g., volcanoes. (*b*) Incomplete combustion of carbon, other than those mentioned in paragraph 6—e.g., underground combustion of wood or coal, or tobacco smoke, dangerous presumably only when inhaled. (*c*) The gases produced by explosives. (*d*) Cases where carbon compounds are being dealt with by catalysts or enzymes. The intestinal gases of herbivora are stated to contain carbon monoxide. I have found CO in sheep's blood obtained from the butcher.

8. *Carbon Monoxide in Petrol Motor Exhaust.*

As might be expected the amount of carbon monoxide in the exhaust gases of motor-cars varies greatly. It varies with the completion of the combustion and also with the ratio of fuel to air. So long as there is free oxygen in the exhaust the quantity of carbon monoxide is small. But before the oxygen has completely disappeared from the exhaust gas carbon monoxide is present in noticeable content, and it is found in increasing amounts as the mixture is made richer. Table IV. shows not only the way that decrease of oxygen is accompanied by increase of carbon monoxide, but shows also the way that the power developed by the engine varies.

TABLE IV.[5]

Ratio air to fuel.	Power developed.	O_2 per cent.	CO per cent.
23·9 to 1	9·8	7·6	0·0
20·1 to 1	15·5	4·8	0·0
18·1 to 1	18·1	3·8	0·4
17·2 to 1	18·5	2·1	0·1
15·5 to 1	19·7	0·6	0·4
14·0 to 1	20·0	0·4	2·4
13·5 to 1	19·9	0·2	4·0
12·5 to 1	19·8	0·1	6·3
11·5 to 1	19·8	0·2	8·1
10·9 to 1	19·9	0·4	10·6
9·9 to 1	20·0	0·6	12·1
8·2 to 1	15·1	0·0	15·3

Inspection of the table will show that the power developed by the engine rises rapidly as the mixture

is made stronger from 23·9 to 1 of fuel to 18·1 of air to 1 of fuel. From this point onwards the power of the engine rises slowly to a maximum, forms a slight plateau, but stays for practical purposes at the same value until the mixture reaches the ratio of 9·9 air to 1 of fuel. A stronger mixture than this causes a sharp fall in the power. The oxygen in the exhaust falls fairly steadily from 7·6 per cent. to 0 per cent., whereas the carbon monoxide steadily rises from 0 per cent. to 15·3 per cent., and the important point should be noted that unless there is some carbon monoxide in the exhaust the full power of the engine will not be developed. And not until there is 15·3 per cent. carbon monoxide in the exhaust will the power of the engine fall off noticeably. Now it is an unfortunate fact that a carburettor with given sized jet and air passages will produce a weaker mixture at slow speeds than at fast, and, what is more important, a weaker mixture when the engine is cold than when it is hot. The cause of this is that as air is warmed it expands, and so a smaller weight of hot air will enter the engine than would be the case if the air were cold. On the other hand, a greater weight of warm petrol will enter the engine than would be the case if the petrol were cold, because petrol decreases in viscosity as it becomes hotter, and so a greater weight flows through the jet in a given time.

The mixture, therefore, becomes richer as it becomes hotter, since the petrol increases but the air decreases. If, then, the carburettor is so adjusted that it gives a mixture which will fire well and develop nearly full power when the engine is cold, it is certain to give an unnecessarily rich mixture when the engine is hot. It is for this reason that the average motor-car in adjustment is found to produce an exhaust containing about 4 to 10 per cent. carbon monoxide. There is also present in the exhaust irrespirable gas and carbon dioxide gas, and therefore the three factors discussed in the case of coal gas are all present. The poisonous effects of exhaust gas are therefore greater than its carbon monoxide content alone would suggest. In addition there may be unburned petrol vapour. The symptoms of this are not very unlike those of carbon monoxide poisoning—dullness, dizziness, sickness, and weakness of bowels. The principal points of difference are, there is no flushing and no increased rate of heart and respiration as in the initial stages of CO poisoning. In addition, there may also be present nowadays in the exhaust compounds of lead as the result of lead tetra-ethyl in the exhaust.

It would be digressing from my subject to give full details, but these points may be mentioned: The symptoms of lead tetra-ethyl poisoning[6] are usually insomnia, headache, sickness, pallor, loss of weight, itching of skin, muscular weakness, and tremor. Unlike ordinary lead poisoning there is no lead line round the gums and no abdominal pain. But like ordinary lead poisoning lead is found in both fæces and urine; the latter is very acid. With adequate precautions there is no evidence that harm will result to the user of ethyl petrol.[7] Men engaged in its manufacture or blending run much greater risk. Present-day petrol engines will probably not be found to give improved results with its use. Engines to be designed in the future with high compression ratios may be expected to give somewhat greater efficiency. The risk of motor-car exhaust poisoning in the open country is negligible. Poisoning may occur in tunnels under rivers, traffic blocks, closed garages, and bench tests in workshops. Leakage of exhaust gases and gas from the crank chamber into saloon cars is a likely cause of poisoning, as also is the case of exhaust heated radiators and foot warmers.

9. *The Tests for Carbon Monoxide.*

Carbon monoxide may in a suspected case be tested for either in the air or in the blood of men or animals which have been exposed to that air. The tests for carbon monoxide in air are: (1) mice or small birds; (2) combustion and estimation by heat generation [9]; (3) combustion and estimation as carbon dioxide (Haldane's method); (4) iodine pentoxide; (5) ammoniacal chloropalladate [10]; (6) ammoniacal silver nitrate; (7) absorb by blood and estimate the CO in it.

For the quantitative estimation of carbon monoxide in blood the following methods have been used: (8) the carmine method (Haldane); (9) the tannic pyrogallic acid method [11]; (10) the reversion spectroscope [12]; (11) the photographic method.[13]

I have no personal knowledge of method (9). It is said to estimate carbon monoxide in blood with an accuracy of 5 per cent. The carmine method has the disadvantage of requiring good daylight for the titration, because daylight has a photo-chemical effect causing carbon monoxide to leave blood. Method (10) in practised hands is accurate to 5 per cent., method (11) to 2 per cent. With special technique these values may be halved. The corresponding values for CO in air would be 0·008 and 0·003 per cent. Method (10) has the advantage that the quantity of blood required for a test is small; 0·1 c.cm. is ample.

10. *Prevention and Treatment of Acute CO Poisoning.*

Prevention consists: (1) In preventing access of the carbon monoxide-containing mixture to the lungs of men and animals, by the provision of suitable flues, pipes, taps, meters, &c. (2) In the provision of suitable tests so that the adequacy of such flues, pipes, &c., can be periodically tested. (3) In the provision of suitable masks [8] so that if men have to enter a poisonous atmosphere they may be adequately protected. (4) By the provision of suitable remedies so that if any of the above precautions fail life may not be lost. The remedies consist of oxygen in cylinders or better oxygen 50 per cent. carbon dioxide in cylinders and a mask or funnel for administering same. In addition hot-water bottles should be ready to hand since warmth has been shown to be an important factor in saving life from carbon monoxide poisoning. Artificial respiration may be necessary. Stimulation of the respiratory centre by injections of potassium cyanide has yet to stand the test of time. Blood transfusions may be resorted to.

11. *Chronic Carbon Monoxide Poisoning.*

Cases of acute CO poisoning are fairly clear as a rule Chronic cases are not so readily diagnosed. The amount of CO in the blood at any time may be small and in the absence of special apparatus may not be detectable. As with acute CO poisoning I think we are justified in dividing cases into two classes—those in which compensation takes place and those in which it does not. The former compensate for the CO present in the blood by correspondingly increasing the oxygen-carrying power of the blood. This may be done by increasing the number of corpuscles per cubic millimetre of blood or increasing the hæmoglobin (colour-index) per corpuscle. The change would not be obviously different from that which follows living at a high altitude, where the oxygen tension in the air is below the normal value.

In the uncompensated cases, on the other hand, the reduction in the oxygen-carrying power of the blood seems to act almost as "the last straw." Numerous and varied are the conditions which are stated to follow the chronic poisoning: Pneumonia, tubercle, anæmia, &c. It is particularly necessary therefore that adequate diagnostic methods should be available. Birds and other small mammals are useless for testing for the amount of CO in air which will produce chronic poisoning, since tests show that their blood takes up less CO at a given per cent. CO in air than the blood of man. Tests of much greater precision are required. The symptoms of uncompensated CO poisoning may be shortness of breath, particularly on exertion, headache, pallor, weakness, sleeplessness, coldness in the extremities, and depression. The treatment is, of course, to find out the cause and to stop it, and to give the patient fresh air, tonics, and good food, and plenty of outdoor exercise.

12. *The Medico-Legal Aspect.*

Acute CO Poisoning.—In acute carbon monoxide poisoning the symptoms and history of the occurrence must usually make a decision fairly easy. If in addition there is the evidence of an expert as to the amount of CO in the patient or in the air he was breathing no questions would appear possible. But if this evidence is lacking and the patient is only examined some time after the incident then difficulties may arise. Even after the lapse of many hours, however, a delicate test may enable CO to be found in the blood since the rate of excretion is slow particularly as the percentage still in the blood approaches zero. Thus after 30 per cent. CO in the blood some may usually be detected eight to ten hours later. If the amount is measured and the numbers of hours since exposure is known the probable amount present at the maximum may be roughly inferred.

Chronic CO Poisoning.—Here the symptoms are more vague, the history as a rule less certain. But, as in acute cases, reliance should be placed on finding CO in the blood. If none is found it does not exclude the possibility from a medical standpoint, for the circumstances may be such that the amount of CO in the blood fluctuates, and at the time of the test the amount may be below the threshold value for the test that is used. In such a case further tests at other times of the day should be made with the man engaged in his ordinary routine, and tests of the air should be made at his home and his business.

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MEDICINE AND THE LAW.

Income-tax Subtleties.

HIGH taxation is notoriously a reason for the diminition of voluntary gifts to charitable foundations, and the committees of hospitals and similar institutions are keenly interested in any possible concession. Some years ago the University College of South Wales and Monmouthshire appealed for a sum of £250,000 for general development and for the particular object of its physics and chemistry laboratories. There was reason to believe that, if donors made contributions out of taxed income and spread them over a period of seven years, the College would not only benefit by the contributions themselves, but would also be able to reclaim the amount of the tax already paid. Certain generous donors then entered into formal covenants undertaking to pay the College out of their taxed income a specific sum in quarterly instalments during the next seven years. These instalments they duly paid, but the Inland Revenue authorities were unable to fall in with the plan. One must distinguish, it seems, two different ways of expressing the covenant in benefactions of this character. One way is to promise to pay a specific annual sum out of taxed income yearly for seven years; in this case the Inland Revenue appears to be willing to hand back the tax if it is claimed by the institution which receives the benefaction. The other way (the form adopted in the University College instance) is to promise to pay a capital sum spread over seven years; in this case the Inland Revenue refuses the refund. Having framed their promises in the form unacceptable to the Inland Revenue authorities, the benefactors went to the Court of Chancery and asked that their promises might be rectified. A benefactor, whose total gift was to be £28,000, requested that the following words should be struck out of his covenant "during seven years . . . I will pay from my general fund of taxed income, in quarterly instalments, the sum of £28,000 net," and that the following words should be substituted "for seven years . . . I will pay from my general fund of untaxed income on April 1st, July 1st, Oct. 1st, and Jan. 1st in each year the sum of £1000 net." The University College of South Wales was formerly made a defendant in the action but, naturally, did not object, and therefore allowed judgment to be entered in default of any defence. Mr. Justice Astbury made the orders for rectification as requested, but confessed he could see very little difference between promising to pay £7000 in annual instalments and promising to pay seven annual instalments of £1000 each. The plaintiffs had invited the chief inspector of taxes to intervene in the proceedings, but the Board of Inland Revenue was not to be drawn. It refused to intervene and it declined to be taken to be supporting the application. Thus there seems no certainty yet that the University College has made sure of its claim for refund of tax. It is hard enough to master the law of income-tax; even when there is no doubt of the law, there remains a doubt of what policy the Inland Revenue authorities will adopt. Though it is not their function to be prodigal with money which has found its way into the Exchequer, it would be kind of them to make clear the exact circumstances in which tax will or will not be refunded.

Dairyman Imprisoned.

An Ilford dairyman, who had supplied milk diluted with 5 per cent. of added water, was sentenced last week at the Stratford Police Court to a month's imprisonment with hard labour. A fine is usually considered a sufficient penalty upon a retailer who offends against the Food and Drugs Acts, but this defendant had previously been fined six times for offences in connexion with the supply of milk in the past 12 years. The chairman of the Bench described him as a pest who continually defied the law and robbed the public. There was a second charge, for obstructing two inspectors of the Essex County Council; in respect of this he was sentenced to £25 with the alternative of a month's imprisonment. It would be to the public advantage if the law allowed a court to make an order debarring such habitual offenders from taking any further part in the sale of food.

LISTER INSTITUTE OF PREVENTIVE MEDICINE.

ANNUAL GENERAL MEETING.

AT the annual general meeting held on May 23rd a tribute was paid to the memory of Lord Iveagh whose endowment of the Institute, in 1898, enabled the objects for which it was founded to be pursued on a much larger scale. The Governing Body records its appreciation of the continued coöperation it has enjoyed with the Medical Research Council, the Department for Scientific and Industrial Research and the British Empire Cancer Campaign. The department of Biochemistry has been entrusted by the Medical Research Council with a lengthy inquiry into the vitamin-content of Empire products and the effect of preservation and storage thereon. Dr. S. S. Zilva is in charge of the investigation, the cost being defrayed by a grant from the Empire Marketing Board.

Department of Bacteriology.—During the past year Prof. J. C. G. Ledingham has elaborated a method

of propagating vaccine virus in the dermis of the rabbit. Following on his discovery three years ago, that small-pox material taken direct from man was capable of producing a marked response in the dermis of the rabbit, he has attempted to pass the small-pox virus from rabbit to rabbit with only moderate success. The passed material from the dermis seems to lose its virulence rather rapidly and the cause of this requires further investigation. As a laboratory test for small-pox the intradermal inoculation of the rabbit with human material is recommended. Dr. C. H. Eagles and Dr. D. McClean are using the dermal vaccine as seed in their experiments on the cultivation of the virus in vitro in association with chicken embryo. Studies on bacterial variation and the antigenic structure of bacteria have been undertaken by Dr. J. A. Arkwright. Working on *B. typhosus* he has examined the conditions of agglutination by serum and acids, concluding that substances agglutinable by serum and by acid are probably identical. An investigation by Dr. H. Schütze of 18 strains of *B. pseudotuberculosis rodentium* and related organisms has resulted in their classification into three types ; one of the pseudotuberculosis groups has a serological affinity with certain Salmonella strains.

The action of the toxin of *B. welchii* on red cells in vitro has been studied by Dr. Orr and Dr. Campbell in view of the claim that *B. welchii* plays some part in the ætiology of pernicious anæmia and that a form of chronic anæmia can be produced in animals by inoculation with cultures of this organism. They have exposed emulsions of red cells to the action of filtered broth cultures of *B. welchii*, these filtrates containing a hæmolysin of variable strength. It was found that the red cells passed through definite changes, microcytes appearing first, followed by macrocytes, and these again by a stage in which the majority of the remaining cells have resumed their normal diameters. This change in size was not met with when other hæmotoxins—e.g., from *V. septique*, *B. tetani*, streptococci, and straphylococci, &c.—were used. By using blood which had been reduced hæmolysis could be speeded up considerably ; and the change in size, moreover, proceeded at a more rapid rate than when ordinary oxygenated blood was used. The interpretation of these observations and their possible relation to the blood picture of pernicious anæmia are under consideration.

Among the many researches in progress are those concerned with the vitamins. Dr. Zilva has worked on the relation of the reducing capacity exhibited by substances rich in vitamin C to their antiscorbutic activity. It transpired that in spite of the close association, the reducing agency and the active principle are not identical, but that the former contributes to the stability of the latter. It was found that the reducing agency is not the only stabilising principle associated with antiscorbutic solutions. An inquiry on the variation of the antiscorbutic factor in apples has been started by Dr. Zilva and Mr. Hoyle. Apples grown and stored under carefully controlled conditions and apples of known history from the various Dominions are being investigated. The results so far obtained make it clear that the vitamin content of apples is by no means uniform and that it is controlled by various physiological factors. Dr. Smedley-MacLean has continued her investigation of the nature of the unsaponifiable matter of yeast fat, now the main source of ergosterol (provitamin D), and has isolated from it a second sterol, to which the name of zymosterol has been given. Zymosterol is distinguished from ergosterol by its greater solubility in organic solvents, its dextro-rotation, and the absence of selective absorption in the ultra-violet region. The biological properties of the irradiated sterol are being tested in conjunction with Miss E. M. Hume and Miss Henderson Smith.

Department of Experimental Pathology.—The testicular and prostatic hormones have been studied by Dr. V. Korenchevsky, in coöperation with Miss M. Schultess-Young, also the effect of ovarian extract of parathyroid extract, and of pituitary gland on nitrogen metabolism. The two active constituents of water-soluble B vitamin have been further examined by Dr. Harriette Chick and Miss H. M. Roscoe. They suggest that these should be called, provisionally, vitamin B_1, the antineuritic, more heat-labile, constituent and vitamin B_2, the so-called "anti-pellagra," more heat-stable constituent. When young rats receive a diet complete in all respects, but devoid of vitamin B_1, they survive only 3–4 weeks and die with or without symptoms of paralysis. If, on the other hand, the diet is deficient only in vitamin B_2, life may be prolonged for 2–3 months or longer, but there is no significant increase in weight, and growth is at once restored if vitamin B_2 is given. A concentrated preparation of the antineuritic vitamin B_1 can be prepared, which is devoid of vitamin B_2. Attempts are now being made to isolate the other vitamin and to investigate its distribution in different whole cereals and their constituent parts. The existing knowledge regarding the distribution of what was called vitamin B has been compiled chiefly on the results of experiments upon the prevention and cure of polyneuritis in pigeons and, therefore, has reference only to distribution of vitamin B_1. The curious phenomena named "Refection," the spontaneous occurrence of the capacity to thrive on diets deprived of B vitamins, which has been studied recently by L. S. Fridericia and his colleagues in Copenhagen, was also discovered independently at the Institute. The most reasonable explanation, and the one adopted by Fridericia, is that the alimentary tract of the animal becomes infected with some yeast or other organism and thus the materials are produced which are needed to correct these different defective diets. The titration respectively of vitamin A and of vitamin D has been the subject of investigation by Miss Hume working with Miss Henderson Smith, and Miss K. M. Soames working with Miss J. L. Leigh-Clare. The assessment of the proportion of the total energy absorbed when sunshine falls upon the skin has engaged the attention of Sir Charles Martin for some considerable time. As the amount absorbed cannot be directly measured, it was hoped to arrive at it by determining what was not absorbed—i.e., the amount irregularly reflected. Some interesting comparative data were obtained, and certain difficulties having recently been surmounted, it is hoped that quantitative measurements will soon be obtainable.

Dr. T. Lumsden, with the assistance of Miss A. C. Kohn-Speyer, continued his investigations into the feasibility of producing a vaccine effective against malignant tumours.

The Department of Protozoology has made further experiments upon *Bodo caudatus* exposed to the influence of acriflavine, and Dr. H. M. Woodcock has continued his work on the encephalitis of rabbits. Rabbits have been successfully inoculated intracerebrally witn an emulsion of an infected kidney of a dying rabbit.

Department for the Study and Preparation of Antitoxic Sera.—Research in this department has been concerned with the preparation of plague toxins and of anti-plague serum, the use of formalised antigens in the production of therapeutic sera, and the experimental production of pneumococcal endocarditis, and of arteriosclerosis in rabbits.

Investigations on Foot and Mouth Disease, for the Research Committee of the Ministry of Agriculture, have been continued at the Institute during the year in the special laboratory and animal house set apart for the purpose, under the supervision of Dr. J. A. Arkwright. The lines of investigation pursued have included an inquiry into the cause of the restriction of the lesions to the feet and mouth ; the fate of the virus in the bodies of convalescing animals ; the survival of the virus upon various materials, and under a variety of conditions ; the susceptibility of wild animals to infection, and a general study of

artificially induced immunity to foot and mouth disease. The Third Progress Report of the Foot and Mouth Disease Research Committee will be published shortly.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Conflicts in the Medical Profession.

THE increasingly difficult position of physicians in this country has divided the profession into three distinct groups: (1) doctors employed in full or in part by the *Krankenkassa*, or sick-clubs, numbering about 1200; (2) independent doctors with no fixed salaries, of whom there are about the same number; and (3) hospital staff doctors, university lecturers, and medical officers of health, some 2000 in all. The last group sometimes throws its lot in with the first and sometimes with the second, according to personal interests. The clash of interests between the three groups was recently manifest when the Government, or rather the political parties, attempted to win the votes of certain sections of the community by organising a new sick-club for bank employees and certain business and factory clerks. The formation of such a club would result in a large and by no means poverty-stricken section of the community being taken out of the hands of the private practitioner. The organisation of Vienna doctors refused to accept the proposal, and as its president, together with a fair proportion of representatives of the sick-club doctors, favoured the Government's plan, he was forced to resign. After a very heated election campaign the representative of the independent doctors, Dr. Weinländer, was elected president by a small majority. Thereupon the other group threatened to separate from the organisation, and the danger of a split in the profession seemed imminent. The conservative elements in both groups were anxious to bring about a reconciliation, and a few days ago we learned that some sort of an understanding had been reached which will enable all medical men to partake of the opportunities afforded by the formation of a new big sick-club. Only a few appointments with fixed salaries will be made for members living in outlying districts, all other members being allowed to choose their physician and specialist from a panel of doctors. Payment will be made at a fixed scale according to work done—i.e., for each consultation or call. This means that the practitioner will have to work for lower fees than those paid by private patients, but these are gradually disappearing. He does not lose his private patients entirely as they may come to him as panel patients. The sick-club doctors on their side have consented not to oppose the attempt which is being made to remove from membership of the sick-clubs those persons whose income is above £25 to £30 a month. A certain section of wage-earners should thus be left to the private practitioner. The profession is also trying to bring this condition concerning income into force in the other sick-clubs, especially amongst railway, municipal, and state officials. Many of these have salaries of £50 to £80 a month. Yet they are all compulsory members of the sick-clubs though this income is considered large in this country, being greater than that of most medical practitioners.

Voronoff's Operation.

At a recent meeting of the Vienna Society of Physicians Dr. Schleyer showed two patients who six months previously had undergone Voronoff's operation, which consists of implantation of part of the testis of a monkey into the testis of a man. The patients were 70 and 56 years of age respectively, and their condition before operation was typical of senility, showing loss of mental and physical strength, with forgetfulness, fatigue, impotence, and loss of libido. No change was noticeable for five weeks after the operation, but the older patient then stated that he was beginning to feel much better, and after nine weeks he again had erections; the younger also felt stronger and was more active. Both men are satisfied and look strong and healthy. In the discussion which followed Dr. Schönbauer, from the Eiselsberg Clinic, reported on four Voronoff operations, two of which had had good results, and two of which had been failures. Experiments have been made in the clinic on the transplantation of testicles from one monkey to another, and it was shown that the transplanted gland was always destroyed, microscopical examination showing that destruction took place within three months. Dr. Bachrach says that he has got the same results as Voronoff claims for his method by implanting testicular tissue into the muscles of the abdominal wall. Prof. Bauer, who at first was sceptical about the results of the operation, had to admit that even excluding auto-suggestion the improvement of somatic conditions is undeniable. He thinks that the implantation of young glandular material into testes suffering from regressive changes causes a distinct renewal of their function. Suggestion must be excluded, for the favourable results do not appear till some weeks after the operation. Prof. E. Schwarz is not in favour of the word "rejuvenation," since he believes that the normal physiological process of senility cannot be prevented by our interference. Transplantation—an operation which can be repeated several times—simply results in a temporary renewal of the production of testicular hormone, and this disappears with increasingly short intervals after each transplantation. Death cannot be averted. The effect, as Voronoff himself has stated, lasts at most from two to four years, but even this added period of well-being is important to the aged, as Dr. Schleyer remarked in summing up the discussion.

Statistics of Practitioners in Vienna.

As a result of the registration of medical men now being carried out by the Vienna Board of Health, some interesting facts have come to light. The youngest practitioner (apart from hospital doctors) is 23½ years of age, and the oldest 87. The majority enter the ranks of wage-earners at the age of 29½ (40 per cent.), whilst only 12 per cent. settle down after the age of 36. More than 70 per cent. of all practitioners are between 40 and 65 years, and 9 per cent. of the total are women. There are 3·5 doctors per 1000 inhabitants, and 3·8 women doctors per 10,000 female inhabitants. Whilst only 11 per cent. of the population of Vienna are Jews, they form over 30 per cent. of the profession. Only Austrian subjects are practising here, but over 20 per cent. are foreign born—i.e., were born in places now situated outside the Austrian Republic. More than 22 per cent. of the total are specialists, and 10 per cent. are dental surgeons. About 2000 medical men (apart from the dental surgeons) have a telephone, and no doctor is allowed to practise in two separate places. Panel doctors, however, can use their own consulting-room for private patients if the *Krankenkassa* provides them with another one elsewhere for their panel patients.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

B.C.G. Vaccine.

THE extent to which the daily press in Paris has commented on the recent discussion at the Academy of Medicine on B.C.G. vaccine is a sign of the interest taken in this matter by the man-in-the-street. The fact that 81,600 infants have been inoculated with the vaccine in France alone, between July 1st, 1924, and May 1st, 1928, shows how extensive has been its employment, and in as many as 75,000 cases it has been given to infants in non-tuberculous surroundings. This is a point of the greatest importance; no one apparently, had any cogent objections to raise to the use of B.C.G. in infants born into tuberculous surroundings. The immediate and ultimate effects of B.C.G. inoculation might be rather unpleasant

but they were obviously the lesser of two evils when the chances of a tuberculous infection were great. But—and this was the point on which Prof. Lignières insisted repeatedly during the discussion—is it at the present stage justifiable to inoculate healthy infants in healthy surroundings with a live virus about whose ultimate fate in the body insufficient information is available? In support of his hesitation on this score, he drew attention to the frequency with which Dr. Tzekhnovitzer, of Kharkoff, found rabbits, inoculated with B.C.G., to die of unknown causes. He implied that the B.C.G. might at any rate have been a contributory factor in some, at least, of these deaths. With regard to Calmette's statistics, Lignières suggested that if these are to be beyond reproach the best procedure would be to inoculate every other infant and animal concerned. Calmette's defence consisted of stressing the hypothetical, problematical, theoretical, suppositious, quasi-prophetic character of the criticism advanced, and he concluded with the statement that he had not yet been faced by a single observation of a case of an infant, born or brought up in healthy surroundings, inoculated with B.C.G., and dying of a tuberculous infection caused by B.C.G.

The Association for Developing Medical Relations is organising a number of courses to be given in English at Paris. The subjects include operative surgery, cardiology, pediatrics, and ophthalmology, and further announcements will be forthcoming later.

A course in dermatology and venereology will be held at the clinic for cutaneous and syphilitic diseases at Strasbourg from Sept. 17th to Nov. 3rd, under the direction of Prof. L. M. Pautrier. Those who attend will be given the opportunity of personally applying the various methods of treatment, and will have free access to the clinic outside the hours of the lectures. Applications should be sent to Prof. Pautrier, 2, Quai St. Nicolas, Strasbourg, who offers to send particulars of accommodation in the city.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

Tularæmia: Human Autopsy.

AN autopsy made in St. Mary's Hospital, Duluth, Minnesota, on a man who died 16 days from the known inoculation of the disease, shows that the pathology of tularæmia in man resembles very closely that already demonstrated in animals. The infection in his case was virulent. Two days from inoculation the patient was compelled to take to his bed and the disease progressed through cyanosis and stupor to death, which occurred before the positive serodiagnosis for tularæmia had been returned from the state laboratory. The inoculation had taken place in the middle finger of the left hand from the ulcer in which a purulent exudate was expressed at autopsy. The epitrochlear gland was considerably enlarged, and there was enlargement of a few left axillary glands. Definite nodules were found scattered over the pleura of each lung, in the lung substance, in the liver, kidneys, and spleen (particularly concentrated beneath the capsule). There was broncho-pneumonia in both lungs. In the intestines Peyer's patches of solitary follicles were found swollen and congested. Microscopically the nodules of tularæmia closely resemble miliary tubercles. The nodule, however, grows much more rapidly than in tuberculosis and attains a much greater size. It tends to depress the surface of the affected organ rather than to elevate it, and is slightly irregular. Giant cells, though they have been found in previous cases of tularæmia, were not present in this case, which terminated more rapidly than any previous case that has come to autopsy.

Destruction of Mouse Sarcoma by High-frequency Currents.

Remarkable success in the destruction of a transplantable sarcoma in mice by high-frequency electrical oscillations is reported by Dr. J. W. Schereschewsky,[1] of Harvard University and the Public Health Service. The frequencies that have been most successful have been between 68,000,000 and 66,000,000 cycles per second. The effect of treatment is immediate and pronounced, and a small tumour of 485 mm. may become almost impalpable. A reaction follows in 24 hours with œdema of the treated area. In favourable cases, when the œdema had subsided, the remains of the tumour grew smaller and smaller until they disappeared. When the current used is 300 milliampères or less the skin disturbance is slight. When more powerful currents are necessary some superficial necrosis of the skin results. The percentage of recovery of 403 mice was 25 per cent., the remainder dying, mostly of intercurrent infection, before the death of the last control mouse. In the controls no spontaneous regression was observed. Only 5·5 per cent. of the treated mice actually died from tumour. Some success also has been achieved with the Rous fowl sarcoma, and Dr. Schereschewsky thinks that a different frequency may be more successful in this latter tumour. (A frequency of 135,000,000 proved to be useless in the mouse sarcoma.)

As to how the result is achieved little is known. The thermal effect of these very high frequencies, unlike that of medical diathermy, is slight. Sections of the tumour after treatment were examined by Dr. S. B. Wolbach, who reported as follows:—

> "In general, the immediate effects of the agency . . . is necrosis to the tumour cells and accompanying vascular and connective tissue structures. The general picture produced is that of so-called coagulation necrosis and the most familiar corresponding picture that I know of is in completely infarcted tissues. A very striking phenomenon, however, as brought out in the slides, is the extraordinarily rapid disappearance of the necrotic tumour. I am quite unfamiliar with anything corresponding to it. In the few microscopic preparations submitted one gets the impression that there has been very rapid solution, possibly solution by autolysis (?) of the cells including the nuclei."

The most serious limitation to the method is that, so far, it has been possible to apply it only to subcutaneous tumours.

The Detroit Department of Health has recently made an interesting survey in an attempt to discover what are the factors which are preventing the public from making use of toxin-antitoxin. A sample of 100 cases of diphtheria was chosen and in each case the parents were asked to state the reasons why their children had not been protected. In nearly one-half the cases (45) the reason was given as plain procrastination. This makes evident the duty of the family physician to urge the importance of this measure and the dangers of delay. In 14 cases the parents had not heard of toxin-antitoxin and only in nine cases did the parents urge that they had no faith in this method of prevention. In nine cases fear of pain had been the hindrance.

The Parker Bill for the coördination of the public health activities of the federal government was passed last month by the House of Representatives. Besides facilitating the exchange of personnel between different bureaux of the health service the Bill will establish a corps of nurses and a national advisory health council and will increase the scope of the hygienic laboratory. It has still to receive the approval of the Senate and the signature of the President.

The fifty-seventh annual meeting of the American Public Health Association will be held in Chicago from Oct. 15th to 19th. The American Child Health Association and the American Social Hygiene Association will meet with this organisation

[1] Public Health Reports of the U.S. Health Service, April 20th, p. 927.

Correspondence.

"Audi alteram partem."

HIDEYO NOGUCHI.

To the Editor of THE LANCET.

SIR,—I wish to add a tribute to that paid in your columns last week to the memory of Dr. Hideyo Noguchi, whose untimely death from yellow fever at Accra on May 21st has deprived the world of one of the most distinguished scientists of our time. It is all the more regrettable as the investigation into yellow fever had but a short time previously claimed the life of Prof. Adrian Stokes, and science can ill afford such irreparable loss.

My first introduction to Noguchi was at the Rockefeller Institute in New York in 1922, within a few days of my arrival. There was a tap on the door of my room and in came Noguchi. He introduced himself, inquired about my welfare, and asked if he could be of any assistance. I was very impressed that this great man should seek me out and offer his friendship, but such was characteristic of Noguchi. I was a frequent visitor to his laboratory. He was never too busy to show me his technique, discuss problems, or demonstrate his experiments. Many a time, working late at night, I have passed Noguchi's room on leaving the Institute, and seeing the lights on, I entered. He would be busy, with the tables in his whole suite of rooms covered with innumerable cultures and specimens. A few words of welcome and a smile were always assured from him, and he seemed to welcome the break and would chat for some time. I never knew what time he stopped work. Noguchi was a hard worker, and when deep in a problem he took no cognisance of time. He did his microscopic work in the quiet of his own home, and there might find something which demanded laboratory work. He would set off at once to the Institute, arriving there any hour of the day or night in a taxi (he always travelled in taxis) and immediately engage himself in the new aspect of the work. Noguchi was a "mass" worker, and I think that was one of the secrets of his great success as a scientist. He persisted at his problems, carrying out numerous experiments, using great quantities of material; whereas the average laboratory worker trying out a new medium for some hitherto uncultivated organism might use, say, a dozen tubes, Noguchi would use hundreds. The organism might grow in only one of the tubes, but still it was there cultivated. Similarly, in his animal work it was not uncommon for him to use a hundred guinea-pigs for one experiment alone. Perhaps only one, or even two, reacted, but that was sufficient to establish a definite point. Other workers using less material would fail to get the single positive result. If genius is an infinite capacity for taking pains, then Noguchi was truly a genius. His many achievements are well known. The cultivation of spirochætes of several kinds, his researches into yellow fever, vaccine virus, the Wassermann reaction, Oroya fever, Rocky Mountain fever, trachoma, are some of the subjects in which he has enriched medical knowledge and made his name a household word amongst scientists.

He was rather a shy, retiring man, and did not mix freely with the rest of the workers, but preferred the quiet of his own laboratory. He did not seek the many honours he attained, but loved science for its own sake. A keen thinker, a hard worker, a great scientist, his loss will be mourned by those who knew him, not only as a scientist but as a friend.

I am, Sir, yours faithfully,

J. E. MCCARTNEY.

Southern Group Laboratory, Metropolitan Asylums Board, May 25th, 1928.

THE SOCIAL FACTOR IN ACUTE RHEUMATISM.

To the Editor of THE LANCET.

SIR,—The search for what may be called the social factor in the ætiology of acute rheumatism has not, so far, proved very fruitful; possibly, I think, because it seems to have been assumed that such a factor must have to do with external environment. The line of thought followed seems to be this: "Rheumatism attacks the poor and not the rich, it must, therefore, have something to do with poverty and its accompaniments or with the places in which the poor live." The soil, site, houses, and rooms where the rheumatic children live are therefore carefully studied and compared with the dwelling places of the non-rheumatic, but except for rather slender evidence implicating dampness, it will scarcely be said that any convincing environmental cause has been found. Dr. McSweeney's studies in Cardiff (THE LANCET, May 12th, 1928, p. 959), in particular, cast doubt on most of the suggestions hitherto made. The fact of the class-incidence of the disease remains, and its cause must be ascertainable.

Is it not possible to base an alternative argument on this admitted fact, running somewhat as follows? The children of the educated classes remain free from acute rheumatism whether they live on clay or gravel soil, in river valleys or on the hill tops, at home or in the boarding-houses of their public schools. This freedom is also shared by young people whose way of life is regulated by the educated—the inmates of orphanages instanced by Dr. R. Miller, and, most notably, the young soldiers in the war, when thousands of lads of 18 lived for months together in flooded trenches, dripping dug-outs, damp, dark cellars, and sodden camps with a very low incidence of rheumatism. In over three years of regimental and field ambulance work in France I cannot recall one typical case. "Trench fever," "trench nephritis," and "trench foot" we knew, but not "trench rheumatism." It hardly seemed possibly that after that vast experiment in the effects of damp and exposure the dampness theory could ever lift its head again. Thus the children of the educated and those under their protection and control have immunity; the disease falls, indisputably, on the less educated classes, but is said to spare, to some extent, the extremely poor.

If these facts are true, is it not at least possible that the differentiating social factor is to be found not in environment but in differing hygienic beliefs and habits? The rheumatic class, for example, clothes its children far more closely and warmly than the immune class; it is notably afraid of cold air, of "overheating"—i.e., strenuous exercise—and of underfeeding, while it views lightly the perils of carious teeth and infected tonsils. Is it not possible that the elusive social factor might be found by turning from environment to personal hygiene and investigating the amount of clothing worn, the quantity of daily food and of daily exercise enjoyed and the room temperatures maintained by typical families of the immune and the susceptible social classes? I am, Sir, yours faithfully,

Hampstead, May 24th, 1928. LINDSEY W. BATTEN.

MEDICAL WORK IN YUGOSLAVIA.

To the Editor of THE LANCET.

SIR,—The article on medical work in Yugoslavi in your issue of May 5th describes admirably th astonishing efficiency with which Serbia is tacklin questions of health. I have just returned from a wee in the Hygienski Savod at Skoplje. Malaria an other tropical diseases are its chief care, and it is a excellent example of an institute of public healt beautifully equipped and organised and functionin magnificently. The institute is the central station fo south Serbia, and work is carried on at some thirt subsidiary stations; medical attention is given i

the villages, anti-malaria work is directed, and there are even bath houses in many places where school children are washed compulsorily once a week—albeit that at first this sometimes needed the assistance of the gendarmarie. That such perfection is possible in the Balkans must be seen to be believed.

We were treated with the greatest possible kindness —in five languages— by the director, Dr. Rankov and his assistants, who were willing to give unlimited time and trouble in showing their work to foreign visitors. It is a remarkably good centre for studying some of the problems of malaria. Why, for instance, should blackwater fever be unknown in the Skoplje area, while here in Greek Macedonia as many as 36 cases were reported for last year in the hospital of Nea Moudania alone?

To anyone interested in research, or in the medical organisation of a "new" country, the institute at Skoplje is a veritable happy hunting ground.

I am, Sir, yours faithfully,

CICELY D. WILLIAMS, M.B. Oxf.

Society of Friends, Salonika, May 10th, 1928.

SOUND DEADENED ROOMS IN THE TREATMENT OF AURAL INFLAMMATIONS.

To the Editor of THE LANCET.

SIR,—When we give consideration to the damage of the internal ear from the influence of constant noise as seen in certain occupations where noise is concomitant, we realise that the ear has not received the protection that has been given to other organs by functional rest, especially during inflammation. The stomach is rested by a careful diet. The heart is helped by interdiction of the strain of exercise. The eye is kept shaded or in a dark room or its active function is minimised by atropine. An injured joint is mobilised. I might cite many examples where functional rest is considered a sine qua non of treatment in inflammation. No one has ever considered that the ear should receive the same care. Middle-ear inflammations are allowed to pass through their course without any thought that they are prejudiced by the environmental clamour. The sequels of chronicity and mastoid involvement are almost accepted as reluctable; we consider that we have done our best for conservation when we have opened the drum and used isotonic or antiseptic irrigations with appropriate therapy to the nasopharynx and the nose. A striking fact in the effect of noise on the internal ear is that only the tones that reach the internal ear through the oval window cause this degenerative change. Does it not seem reasonable that the functional activity of the middle ear may aggravate congestion and increase the potentiality of the aural sequelæ? We see so often aural inflammations which are beginning to show operative necessity resolve completely when hospitalised; how much more benefit would accrue to this partial rest by a more or less complete functional rest? The influence of silence on the course of laryngeal affections has been demonstrated and appreciated.

The ear stands alone of all the organs in that it gets no real rest during the 24 hours. The ossicles and drum membrane are receiving all sounds and transmitting them even in sleep. That we do not perceive all the sounds is due to the sleep of the higher centres resulting in a lack of attention. How much influence may over-function have in starting up the peculiar degeneration of the ear in otosclerosis? Why does the spongifying osteitis start around the place of greatest functional activity—the oval window? We may give due credit to the influence of endocrine dysfunction, to hereditary dyscrasy, to changes in calcium content or to other theories of this insidious, progressive, and incurable deafness, but we cannot explain why it begins at the foot plate of the stapes, the place of greatest functional activity of the ear. Senile deafness, appearing more early in life and before senescence of other special organs, is due to the over-stimulation of our modern environment. The clamant need, apparently, is rest. Physicists are experimenting in sound-proof rooms for the use of testing apparatuses to determine acoustic acuity.

No attempt has been made to gauge the benefit of functional rest in middle-ear inflammations; this has never been considered as a part of the treatment and has not been deemed necessary. Is it not possible that the continuous onslaught of sound would by conduction vibrations keep up or aggravate congestion? No differential trial has been made to determine the reaction of the inflamed ear under the ordinary environment and the reaction under functional rest. The majority of patients with middle-ear inflammations are ambulatory partly from custom, partly because it is easier for the patient to come to the doctor than it is for the doctor to carry around his apparatuses. Naturally the patient feels that his condition is not one that requires either local or somatic rest. There is a great deal of difference in the treatment of the ear and the meticulous care of the eye. Why?

It may be impracticable to suggest sound-proof rooms for aural inflammations, and of course it would necessitate a great change in hospitals to have sound-proof rooms. If that radical measure may not have a utilitarian appeal, at least the endeavour to lessen sound for the treatment of aural cases would be of decided benefit. I believe also that the onset of senile deafness would be slowed by occasional rest from noise—a rest that may be partially gained by wearing occlusive plugs occasionally. I make the suggestion, therefore, that sound-deadened rooms should be used for aural inflammations and that the majority of acute ear infections should not be allowed to be ambulatory, but should at least be semi-hospitalised in a quiet room. I venture to assert if hospitals would furnish sound-deadened rooms for the treatment of aural cases we might see fewer sequelæ which at present are a reproach to aural surgery and there would be instituted a distinct advance in preventive medicine.

I am, Sir, yours faithfully,

GEORGE B. MCAULIFFE.

26, West 87th-street, New York City, April 21st, 1928.

MEDICO-LEGAL RESEARCH.

To the Editor of THE LANCET.

SIR,—In your leading article on Status Lymphaticus (THE LANCET, May 26, p. 1078) you deplore the absence of a central institution in London where all medico-legal work could be concentrated in the hands of experienced pathologists to solve this and similar problems. One such problem is the constant occurrence of suicide attributed to ridiculously inadequate reasons. The oft-told story of "recent pains in the head and strangeness of manner" usually ends with a verdict of temporary insanity, with no attempt to discover by expert investigation the essential disease leading to such disaster. New light on the pathogenesis of such cases would help to prevent some of these calamities.

One would like to feel there is a likelihood of your important suggestion leading to some such central institute being organised.

I am, Sir, yours faithfully,

PATRICK WATSON-WILLIAMS.

Bristol, May 27th, 1928.

RHAZES AND AVICENNA.

To the Editor of THE LANCET.

SIR,—The eloquent and learned Linacre Lecture by Sir George Newman published in your issue of May 12th, cannot but have given great pleasure to all who heard it or have read it. I hope, however, he will allow me to offer an amplification of the sentence, in which he numbers Rhazes and Avicenna among the Arab physicians. It is true that they practised Arabian medicine, visited Bagdad, and wrote in Arabic, the scientific language of their day, but they were both Persians and were, as Sir George himself makes clear, original thinkers as well. Rhazes was

born, and lived, at Ray, and the Arabs therefore called him Ar-Razi, just as to-day we often add the name of his city, university, or hospital, to that of some particular worker. Now Ray was built, perhaps, 3,000 years ago, is one of the oldest of Persian cities, and its ruins are plain to see six miles from the modern capital, Tehran. Rhazes is the mediæval European form of Razi.

As to Avicenna, it is true that he was born near Bokhara, but his father was a Persian, and, at about the age of thirty, he himself moved into Persia and lived there for the rest of his life, chiefly at Ray and Hamadan, where he died and was buried (1037). His tomb is on the outskirts of the city, in a good state of preservation. A few years ago certain needed repairs were done by the local doctors and their friends. Need more be said of his fame than that he is quoted to-day by Persian physicians?

Persia may well claim Avicenna and Rhazes as two of her most illustrious men.

I am, Sir, yours faithfully,

London, May 23rd, 1928. A. R. NELIGAN, M.D.

RADIUM TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—In your issue of May 26th (p. 1101) appears the following report of a speech made by Dr. Vernon Davies in the House of Commons:—

"He (Dr. Davies) wanted to impress upon the committee and upon the country that the only safe thing for cancer was early and complete operation. Unfortunately it occasionally happened that they got cases which were late and inoperable, and then perhaps radium treatment might prolong the life of the patient, or perhaps give him a little more ease; but whatever they did they should not get into their heads the idea that radium would cure cancer; it could not do it at the present time. It was only a help, and he was afraid that the rather hopeful tone of the Minister of Health might create a wrong impression in the country and prevent some of those poor people from seeking medical advice in the early stages when something could be done."

This extraordinary misstatement is surely calculated to create a great deal of harm. It seems to be hard enough for many of our British surgeons to realise completely the present-day success of radium treatment, when properly applied to some of the carcinomatous diseases in certain situations where operative surgery is quite impossible, apart from many cases where there might be a choice between operation with removal of a large portion of tissue, and radium with its selective action, microscopically, on individual cells. Thousands of cases have been successfully treated in Great Britain, in certain centres where its action has been properly studied, and in other countries State assistance has been most effectually granted, and the clinics have published for a number of years results indicating complete success, with no recurrence after a lapse of five years, in addition to many thousands of "relative" cures, where the immediate effect, without symptoms, is noted under the period of five years.

No one has had greater experience of operative surgery than Howard Kelly, of Johns Hopkins University, who says:—

"It is generally agreed among the leading lights that present-day gynæcology is certainly both medical and surgical, and that radium has possibilities that the general rank of the profession fails to grasp."

In your own columns recently there have been a number of most encouraging articles, summed up in moderate and chastened language in a leading article on May 12th. Surely in this year of grace it would be much more helpful and hopeful to all sufferers from carcinoma if these could be induced to come forward at the earliest moment with a hope of painless cure by short-wave radiations? I should like to make only one more quotation, and that from Manchester:—

"Undoubtedly one of the greatest obstacles to the successful treatment of malignant disease is the fact that the patient—of the hospital class, at any rate—dreads an operation. If, as the result of further experience of radium treatment in this particular situation, it can be shown that there is an appreciable chance of a cure with but little risk to the patient, and if in addition he realises that no mutilation is involved, this type of patient will present himself at an earlier stage for treatment."

I am, Sir, yours faithfully,

SPENCER MORT, M.S., M.D.,
F.R.C.S., F.R.S. Edin.,
Lieut.-Colonel.

North Middlesex Hospital, Upper Edmonton, N.,
May 29th, 1928.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. A. W. North to be Surg. Comdr.
Surg. Lt. G. Kirker to be Surg. Lt.-Comdr.
Actg. Surg. Lts. (D) to be Surg. Lts. (D): W. Holgate, P. S. Turner, T. G. A'C. Emberson, and A. A. Gardner.

ROYAL ARMY MEDICAL CORPS.

Temp. Lt. D. W. Stuart relinquishes his commission.

ARMY RESERVE OF OFFICERS.

Lt.-Col. E. E. Ellery, having attained the age limit for liability to recall, ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lts. C. W. Badger and C. C. H. Chavasse to be Capts.
J. N. Leitch to be Lt.

TERRITORIAL ARMY.

Capt. J. M. Chrystie to be Maj.
Lt. D. P. Levack to be Capt.
Lt. G. L. Pillans to be Capt.
General Hospitals: Lt. W. H. A. Dodd to be Capt.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions in the rank of Flying Officer for three years on the Active List: J. H. Cullinan, T. A. Edwards, A. R. French, P. J. Nyhan, and B. A. Porritt.

Flight Lt. (Hon. Squadron Leader) F. W. Squair relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader.

INDIAN MEDICAL SERVICE.

Lts. Kaikhushroo Maneckji Bharucha and J. D. O'Neil to be Capts.
Temp. Lt. Des Raj Kajuria to be Temp. Capt.

DEATHS IN THE SERVICES.

Deputy Inspector General of Hospitals and Fleet William Digby Longfield, R.N. (retired), who died May 23rd at Plymouth in his ninetieth year, entered the Royal Navy in 1861 and served as assistant surgeon in the *Octavia* and *Spiteful* during the Abyssinian War of 18 (medal). In 1875 he became staff surgeon and was medical charge of the naval brigade with the sloop *Tenedo* which served in the Zulu War of 1879, and for some tir was the only medical officer at the Lower Tugela. Wh senior medical officer with the Ekowe relief column, he w dangerously wounded at the Battle of Gingihlovo and w specially thanked and twice mentioned in despatches. H was also awarded the Zulu medal and clasp and promot fleet surgeon. In the same year, 1879, he gained t Gilbert Blain gold medal for the best medical journ After a commission in the troopship *Himalaya* in 1891 was appointed fleet surgeon and retired as deputy inspect general in 1893. He held the Greenwich Hospital pensi for good service on the active list.

QUEEN'S HOSPITAL FOR CHILDREN.—The Duke York, who presided recently at the annual meeting of t governors of this hospital, explained that although £100,0 was being appealed for to enlarge the buildings, it w intended to do the work gradually as means became ava able. The endowment income amounts to 5 per cent. of t expenditure and parents' contributions supply a furth 15 per cent. The weekly cost per patient has been reduc from £4 0*s.* 7*d.* in 1926 to £3 16*s.* 1*d.* in 1927.

GENERAL MEDICAL COUNCIL.

SUMMER SESSION, 1928.

PENAL CASES.

TUESDAY, MAY 22ND.

IN accordance with custom, the Council heard the ses in public, and deliberated on their findings in mera.

Reported by the Dental Board of the United Kingdom.

The Case of Alfred Catlow, registered as of 16, West- te, Burnley, "Dentist, 1921," and charged with audulently obtaining £1 each from two club patients r work on dentures which he had not performed. r. Catlow did not appear, and was not represented a legal adviser. The Council directed that his me be erased.

The Case of Laurent Eugene Deprimoz, registered as 89, Whitehorse-road, Croydon, "Dentist, 1921," d charged with abusing his professional position by mmitting adultery with a married woman. The spondent was represented by Mr. F. de Ferrars, structed by Mr. F. Gowen. In the divorce proceed- gs between the lady and her husband professional lationship was not material and had not been entioned. In a statutory declaration given during e inquiry Mrs. Dora Hoyle, a probation officer, had ated that the lady and Mr. Deprimoz had both ld her that their first meeting had been a profes- onal one. Mr. Deprimoz, however, had testified at he had known the lady before her marriage, d that he had never treated her professionally cept to make her one denture as a gift in the early ys of their liaison. He had never had immoral lations with her at his surgery. The Board had so heard the evidence of Mr. Charles David Levick support of the respondent's testimony. The uncil, after hearing the legal representatives on th sides, decided to erase his name from the gister.

The Case of Harry Patrick Jones, registered as of Aberford-road, Woodlesford, Yorks, "Dentist, 21." Mr. Jones had been reported by the Board canvassing for patients through an approved ciety. The Council decided to postpone judgment one year, subject to the usual conditions.

WEDNESDAY, MAY 23RD.

The Cases of (1) *Percy Bateman*, registered as of 3, New Cross-road, S.E. 14, L.R.C.P. Edin., 1906, R.C.S. Edin. 1906, L.F.P.S. Glasg. 1906 (adjourned m May, 1926). (2) *Duncan Miller*, registered as of ebe House, Washington, Co. Durham, M.B., Ch.B. 11, U.Aberd. (adjourned from May, 1927); and *Robert Moore*, registered as of 34, Mawney-road, mford, M.B., Ch.B., M.D. 1905 (adjourned from vember, 1927) were considered by the Council. ese three practitioners had previously been before e Council on charges involving drunkenness, and dgment had been suspended. It was decided to ow all three names to remain on the Register.

The Case of Frederick Joseph William Porter, D.S.O., gistered as of the Army Medical Service, L.S.A. nd. 1889, M.R.C.S. Eng., L.R.C.P. Lond. 1890. ajor Porter had appeared before the Council for omoting his professional advantage by means of tices in the Indian press; the Council had found e facts proved and had suspended judgment for a ar. On hearing his assurances for the future it was cided that his name should remain on the Register.

A False Statutory Declaration.

The Case of Dorothy Cochrane Logan, registered as of Cavendish-place, W. 1, M.B., B.S. Lond. 1912, D. 1915, who appeared before the Council on the lowing charge:—

"That you were, on Nov. 7th, 1927, at the Mansion use Justice Room in the City of London, convicted the following misdemeanour—viz., of knowingly and wilfully making certain statements false in material particulars in a statutory declaration made and declared by you on Oct. 12th, 1927, under and by virtue of the Statutory Declarations Act, 1835, and were fined £100 and ordered to pay £10 10s. costs."

Dr. Logan conducted her own case. In setting out the facts brought forward by the prosecution, the Council's solicitor stated that respondent had desired to draw public attention to the imperfect conditions under which Channel swimming was supervised. She had accordingly entered for the prize of £1000 offered by the *News of the World*, and had determined, if she should not actually succeed in swimming the Channel, to claim that she had and to secure the prize, afterwards returning it and publishing the facts. She had entered the water at Cape Griz-Nez on Oct. 10th, leaving it some two hours afterwards and crossing on the boat that accompanied her, and swimming to shore at Folkestone. On landing she had informed the newspaper concerned by telephone, and next day had signed in the editor's office a statutory declaration, under the Act of 1835, that she had swum the Channel. She had subsequently admitted the falsity of this declaration, and had been fined as set forth in the charge. Mr. Harold Watson, commissioner for oaths, and Mr. George Atkins, his clerk, admitted that no special attention had been drawn in the newspaper office to the fact that the document respondent signed was a legal one. Mr. Watson had not been introduced as a solicitor nor commissioner for oaths.

Dr. Logan, in her evidence and her address, gave the following account of the episode.

She was very sea-sick on the journey across the Channel, and when she arrived off Folkestone on the morning of Oct. 11th, her friend said she was too ill to travel to town. She did, however, drive up, and arrived at the newspaper office still dazed. She found the editor and proprietor present, and was handed a simple typewritten sheet, with a request that she would sign it. She said "Is it all right? This looks a bit solemn; I have no opportunity of consulting my lawyers," and was told it was a mere formality between the newspaper and their insurance office, and that she incurred no responsibility by signing it. Only after she had signed the paper did Mr. Watson step forward, and she then began to fear that she had signed something important, but it was too late to withdraw. She regarded signing the paper as an incident in the part she was acting for a serious purpose. She had no idea whatever that the document had legal significance until she received it back stamped a few days later. When charged at the Mansion House she was unable to bring forward as witnesses those who had been present at the newspaper office; and she therefore pleaded guilty on legal advice. The cheque did not remain in her possession but was put in the custody of her bank, to pay the *News of the World* on demand. The prosecution had never sought to impugn her personal character, nor to suggest that the offence was more than a technical one.

Dr. Logan said she was sorry she had "been such an idiot," but she had never before had occasion to sign a statutory declaration, and had firmly believed that to do so it was necessary to go before a magistrate in court and take an oath.

Mr. Horace Carey corroborated Dr. Logan's statement.

The President said that the Council had also taken account of the explanations given by way of mitigation of the gravity of the conviction, which was a serious one under the Perjury Act, and they had formed the opinion that Dr. Logan had not thoroughly realised her responsibility as a citizen and as a member of an honorable profession to refrain from signing any statement for the truth of which she could not vouch. They believe that her conduct henceforth would be worthy of the profession of which she was a member and had decided not to erase her name from the Medical Register.

THURSDAY, MAY 24TH.

The Case of Harry Simpson Harling, registered as of 102, Skipton-road, Ilkley, L.R.C.P. Edin. 1909, L.R.C.S. Edin. 1909, L.F.P.S. Glasg. 1909, who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you abused your position by committing adultery with Mrs.

Annie Belton, a married woman, with whose family you stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated Feb. 16th, 1927, and made absolute on August 31st, 1927, in the case of Belton *v.* Belton and Harling, in which you were the co-respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

This case had been adjourned from the last session at the request of the respondent. There was no complainant. The Council's solicitor stated that respondent had come to Gainsborough in 1914 and had met Mrs. Belton, then Miss Skepper, for the first time in 1916. She had married Mr. Belton in 1919. In September, 1920, respondent had secured a deed of separation from his wife, and the marriage had later been annulled. In 1922 he had begun to attend the Belton family professionally, and in February, 1926, he had attended the youngest boy for an illness. The last day of the attendance had been on Feb. 23rd. On March 18th he had, unknown to Mr. Belton, entertained Mrs. Belton and her sister at supper. Next day he had gone to Lincoln with Mrs. Belton; Mr. Belton had quarrelled with his wife about this incident, and respondent had visited them, as he said in his statutory declaration, to try to settle their differences. Next day Mr. Belton had asked for his account, and on March 31st the Beltons had entered into a deed of separation. On April 20th respondent had sued Mr. Belton for the amount of his bill. In the beginning of May respondent had had influenza, and Mrs. Belton had nursed him; subsequently she had gone to live with him, taking her son and her sister. Respondent urged that he had not committed adultery until long after the professional relationship had been dissolved by his action in the county court, and that his wife and her solicitors had treated him without mercy. Miss Skepper, Mrs. Belton's sister, testified that Mr. Belton had several times made improper advances to her and had offered her money to commit adultery with him. Mr. and Mrs. Belton had been very unhappy together. After deliberation, the Council decided that Dr. Harling had committed infamous conduct in a professional respect, and directed that his name be erased from the Register.

FRIDAY, MAY 25TH.

An Improper Friendship.

Harold Foster Strickland, registered as of 47, Wickham-road, Beckenham, M. 1905, F. 1912, R.C.S. Eng., L.R.C.P. Lond. 1905, appeared before the Council on the following charge:—

"That, being a registered medical practitioner in professional relationship with a married woman, one Mrs. A. B. C., and her family, you abused such position by entering into and, notwithstanding expostulations by Mr. D. E. C., her husband, persisting unknown to him in maintaining a friendship with the said Mrs. C. of an improper character. And that in relation to these facts so alleged you have been guilty of infamous conduct in a professional respect."

Mr. Strickland was represented by Mr. Neilson, instructed by Messrs. Hempsons on behalf of the Medical Defence Union. The complainant, who was referred to throughout the proceedings as Mr. C., was represented by Mr. Carthew, instructed by Messrs. Le Brasseur and Oakley. The facts alleged were that the complainant's family physician had taken respondent as his partner in 1913. Respondent had performed a few minor operations, but the older physician had retained charge of the family until 1924, when Mrs. C. had been confined in his absence and Dr. Strickland had attended; from that time onward respondent had been their sole medical attendant. Social intercourse had begun between the two families about the year 1926, and had been fairly close. In May, 1927, respondent had written to Mr. C. concelling numerous engagements for what he had said was a very private reason. The reason had been an estrangement between respondent and his wife. After that period respondent had visited the house frequently in both a professional and a social capacity without his wife. In Augus Dr. Strickland had visited the C.'s who were o holiday at Seaview. Later in the year Mr. C. ha begun to feel anxious at the friendship that wa springing up between respondent and Mrs. C. A a result of a consultation with his father-in-law, h had approached Dr. Strickland; respondent ha answered that he was glad Mr. C. had been fran that the way to show the world that there wa nothing the matter was to allow his wife an respondent to proceed exactly as heretofore. Th same day respondent had had a heated conversatio with Mr. C.'s father-in-law, and had been show the door; he reported this episode to Mr. C., reiteratin the advisability of his allowing the friendship to co tinue. A few days later Mr. C. had found his wife an respondent at the house of an acquaintance, Mrs. B and had had another conversation with him whic had followed similar lines. On Dec. 24th Mrs. C and Mrs. B. had gone out motoring, Mr. C. remainin at home. Mr. C. had followed them on a bicycle ar found them with respondent in the car. Tha evening Mr. C., after a long conversation with h wife, had written to respondent in most abusiv terms, forbidding him to hold any further commun cation with his wife. When Mrs. C. was in Switzerlan for a holiday in January, Mr. C. had come across letter from the respondent addressed to her, containin expressions of the most unrestrained affectio Adultery was not alleged.

Mr. C. gave evidence proving these statements; answer to a question by the Legal Assessor, he sa that Dr. Strickland had ceased to be his fami physician from Christmas in 1927, the time of th letter complainant wrote to him.

Respondent, in evidence, said that he had fir met Mrs. C. at her mother's house, and had subs quently become acquainted with her brother an sister. He had met Mrs. C. socially, as she had live next door to his partner. Beyond surgical treatmen to an abscess for which his partner had treated h in 1916, he had had no professional relations wit her. The fact that the children of the two household attended the same schools had been the foundatio of the friendship between the two families. Responden had attended Mrs. C.'s confinement in the absenc of his partner, but had left as soon as the baby ha been born. The close terms on which the tw families met in 1926 had owed nothing to his pro fession. He denied ever having met Mrs. C. clande tinely. He did not deny feeling very strong affectio for her, but he had never committed any misconduc with her in the sense that was known to the la Her father, so far from kicking him out of the hous had shaken hands with him. The events of Christma 1927, had been as follows: Mr. and Mrs. C. and friend had come in a car to deliver presents at h nursing-home, where the friend's mother had die He had asked the C.'s in, but Mr. C. had pleaded long round of visits. As he had reached his ow home an hour later the two ladies had arrived the car. It was raining, and he had got into th car with them and they had driven round the neig bouring streets and parted soon afterwards. Th meeting had been entirely unarranged. When had been staying with the C.'s at Seaview Mrs. had just recovered from tonsillitis; she had dislik her gargle and he had prescribed another for her, an a tonic. This had been purely a friendly act, n professional attendance.

Cross-examined, he admitted having correspond with Mrs. C. when she was in Switzerland, but sa he had not done so nor seen her, except with solicito since she had returned. He denied having ev seen her alone or clandestinely, but admitted th friends in whose houses they had met, knowing th affection for one another, had left them alone f periods of a few minutes. In answer to the Presider he admitted that his patients had all been patien of the partnership. Asked whether at Seaview had prescribed for Mrs. C. as her doctor, he answer "No, as her friend."

The President: "You prescribed, then, for another man's patient?"—"No, the local man had finished his attendance." Asked about the estrangement between himself and his wife, he alleged that the relationship had been perfectly normal for 14 years, and that the estrangement had taken place because he had arranged to go to a poker-party with the C.'s in London, and she had not been invited. In answer to a question from the President as to whether his relation with Mrs. C. was the cause of his estrangement from his wife, respondent said that the latter said he had not been playing poker, but had been motoring Mrs. C. about London. Dr. Strickland said he had written the letter because he was in love with Mrs. . He had written one such letter previously, and had used expressions of the kind when he had been with her. It would, however, be unfair to say that the expressions in the letter were the culmination of these short interviews with her in the houses of mutual friends.

Sir Herbert Waterhouse bore testimony to respondent's character as straightforward, honest, and trustworthy, a brilliant surgeon, and a most successful practitioner. He admitted that the letter had amazed him, and he did not think that respondent could have written it at the present time, but that he must have been overwrought and abnormal when he wrote it.

Counsel for the respondent argued that the professional relationship had been quite subsidiary and accidental to the affection of respondent for Mrs. C. He quoted Lord Esher's dictum that, in order to fall within the scope of the definition, "infamous conduct . a professional respect," a medical man must be acting in pursuit of his profession in doing the acts alleged against him. This relationship did not come to that category; there was no "professional aspect." He submitted that when the treatment for certain complaint was over, the relationship of doctor to patient ceased, subject to the payment of the fee. A man could not help becoming fond of a woman, and Dr. Strickland had committed no misconduct. His actions might have been unwise, but they had not been disgraceful or dishonourable.

The Council found the facts proved, and that they amounted to infamous conduct in a professional aspect, and directed that Dr. Strickland's name be erased from the Register.

The Case of Kenneth Albert Wilson, registered as of 8, Wharncliff-street, Scotswood-road, Newcastle-upon-Tyne, L.R.C.P. Edin. 1921, L.R.C.S. Edin. 1921, L.R.F.P.S. Glasg. 1921, who had been summoned to appear before the Council on the following charge:—

"That you were, on March 20th, 1928, at the Central Criminal Court, convicted of the following felony—namely, of using an instrument to procure miscarriage, and were sentenced to 18 months' imprisonment in the Second Division."

Dr. Wilson's legal adviser produced no evidence. The Council directed that his name be erased.

A Charge of Canvassing Dismissed.

The Case of George Howard Shanley, registered as of , Croxdale-terrace, Pelaw-on-Tyne, L.M.S.S.A. 1925. Charges 1 to 8 dealt with certain persons mentioned by name, and were headed:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients either directly or through an agent, and in particular the following persons."

The ninth charge was as follows:—

"That in April, 1927, whilst addressing the Wardley Lodge Meeting of the Durham Miners' Association held in the Miners' Hall, Wardley, you invited the persons present to become your patients."

Respondent was unrepresented.

The complainants were the London and Counties Medical Protection Society. Mr. Carthew, their counsel, stated that respondent had come to Pelaw-on-Tyne, in Durham, and started to practise in March, 1927. There had been two doctors already in the town, Dr. A. B. Stich and Dr. M. L. Thomson, who were partners. On April 3rd these practitioners had written to their society and to the respondent, commenting on the fact that he had not called on them and complaining that a person had been canvassing on his behalf, asking the residents of Pelaw to join respondent's panel or become his patients or members of his sixpenny club; they had threatened him with proceedings before the Council if they heard of any further canvassing after April 5th. Dr. Shanley had replied that anything of the kind had been done without his knowledge through, possibly, the mistaken zeal of a well-wisher, and that a more manly and straightforward action would have been to approach respondent before invoking the aid of the society. On April 10th Dr. Shanley had attended a meeting of the Durham Miners' Lodge at Wadsley. The local secretary had announced that Dr. Shanley wished to address the meeting. Dr. Shanley had then said that he had come into the neighbourhood to build up a practice; he thought the district was big enough to give another doctor a good living, and if anyone wished to become one of his patients he could do so by leaving his name at his call-house, No. 1, Third-street. He also thought it was essential that there should be a colliery doctor to fight compensation cases, and he was not there to run down Dr. Stich and Dr. Thomson. As he was going out he had said that anyone who wanted to change his panel could do so by merely filling up a form or leaving his name and address at the call-house. He had added that many persons had the idea that they must wait six months before changing, but that it could be done at any time. Counsel did not put in the statutory declarations of his witnesses.

Evidence supporting the charges was given by two miners, Charles Dickson and Joseph Ball.

Dr. Shanley, giving evidence on his own behalf, stated that he had been asked to address the lodge meeting by the secretary, from whom he could produce an official letter. Other doctors had been given this privilege on coming to the district. The secretary had told him that there was an impression among the men that, as Dr. Stich and Dr. Thomson were compensation doctors for the colliery, no other doctor could treat compensation cases; he had asked respondent to explain the position of the men towards compensation and the changing of their panel doctors. On being introduced by the chairman, respondent had said: "If you think for one moment that I have come here to discredit or attempt to injure any other doctor, especially Dr. Stich and Dr. Thomson, you are mistaken. I have come to try and make a practice." He had then explained compensation and the method of changing panel doctors in general terms only. The rules for the transfer of panel patients had, he said, been changed five times in the last two years; confusion arose from the discrepancies in the instructions printed on the backs of the cards. He gave another version of the incident related by Ball, and denied the charge of canvassing. Dr. Shanley stated that to his great regret he had been unable to afford to bring witnesses. He put in statutory declarations which testified that he had spoken in very fair terms of Dr. Stich and Dr. Thomson, and had explained compensation and the method of changing panel doctors. He had not invited men to come on his panel. His words had been, "When a man wishes to change his doctor, it is not necessary to wait the time stated on the back of the card."

The finding of the Council was as follows: "The charges under heads 5 and 9 have not been proved to the satisfaction of the Council, and on the others no relevant evidence has been adduced. The case is therefore closed."

MATERNITY HOSPITAL FOR BELFAST.—At a meeting held at Belfast on May 16th, in furtherance of a scheme to build a maternity hospital in connexion with the Royal Victoria Hospital, subscriptions amounting to £15,000 were announced.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MAY 23RD.

NATIONAL HEALTH INSURANCE BILL.

THE House considered the National Health Insurance Bill on Report.

Mr. CHAMBERLAIN, Minister of Health, moved the second reading of a new clause to amend Section 94 of the principal Act as to special orders. He explained that Clause 19 of the present Bill brought within the purview of the National Health Insurance scheme certain new classes of persons, but it was provided under the clause that by special order particular persons could be excluded from the general rules, those persons not being persons whom it was intended nor possible to insure. If the ordinary procedure were followed with regard to special orders it was very possible that the special order excluding them could not be brought into force until some time after they had been brought into the Act. The object of the new clause therefore was to make the special orders operative forthwith. This would avoid bringing people into insurance and making them pay contributions for a short time when they were going to be excluded from insurance before they would be able to get any benefit.

The clause was read a second time and added to the Bill.

On Clause 4 (Amendment of Section 26 of the principal Act as to subscriptions to charitable institutions),

Lieut.-Colonel FREMANTLE moved an amendment to enable subscriptions to be made by approved societies towards the support of district nurses. He said that if the amendment were left out societies might think that they were no longer allowed to make contributions for this purpose.

Dr. DRUMMOND SHIELS, in seconding the amendment, said that the district nursing associations did very good work, and it was most desirable that approved societies should have the power to contribute to their funds if they so desired.

Sir KINGSLEY WOOD accepted the amendment, which was agreed to.

On Clause 16 (Amendment of Section 75 of the principal Act as to disposal of surpluses),

Dr. VERNON DAVIES moved an amendment to include dispensaries among the charitable institutions to which subscriptions might be made from the disposable surpluses of the societies.

Sir KINGSLEY WOOD accepted the amendment, which was agreed to.

Sir KINGSLEY WOOD moved an amendment providing that a special order could be made to meet the case of share fishermen restricting the right of deducting or otherwise recovering the employer's contribution.

The amendment was agreed to.

Sir KINGSLEY WOOD moved an amendment postponing to Jan. 7th, 1929, the coming into operation of the part of the Bill which relates to deposit contributors who cannot find admission to approved societies because of the state of their health, and who are to be formed into a separate section. He explained that the Ministry had been advised to fix the commencement of the Act on Jan. 1st, 1929, save as regarded the persons dealt with in this amendment. That would give them adequate time to prepare a good many difficult regulations and to consult the various interests.

The amendment was agreed to.

The Report stage was concluded.

Third Reading of the Bill.

Mr. CHAMBERLAIN, in moving that the Bill be read the third time, said that they might congratulate themselves that the measure had had on the whole a very favourable reception and that it had been recognised that its provisions would result in considerable improvement in the administration of the National Health Insurance scheme. He thought that it would be admitted that under Clause 1 the scheme offered very generous and liberal treatment to insured persons who by reason of genuine unemployment had fallen into arrears with their contributions. They had also improved the position of the married woman who had been insured and who ceased to be employed on marriage. She would now have the full sickness benefit of 12*s.* instead of a reduced benefit of only 7*s.* 6*d.*, and there was no reduction in the maternity benefit. As a result of the discussion which had taken place on the question of additional benefits it was now clearly understood and agreed that there were certain kinds of benefits which were of the nature of medical benefits, but were really not suitable for administration by insurance committees, or even by the approved societies. They had to contemplate in future, particularly in the administration of clinics, some of which would be set up under this Bill, an arrangement under which there would be a joint representation of the professional men who were concerned in the carrying out of the service and the approved societies, and he hoped that under the Regulations made under the Bill they would be able to provide more satisfactory administration of those benefits. An opportunity had been taken to insert in the Bill a definite statement which embodied the assurance he had given more than once as to the right of the insured person to free choice of dentist or doctor. Under Clause 16 (3) there was a proviso which specifically stated that Regulations were not to restrict the right of any insured person to obtain treatment from any practitioner, clinic, or other institution with whom arrangements in respect to that form of treatment had been made in accordance with the Regulations. He believed that would receive general acceptance. He regretted that it had not been possible to include an arrangement by which a specialist service could be provided for insured persons. He held very strongly that that was the greatest improvement that could be made at this stage in the general scheme of national health insurance. He hoped that in course of time it might be possible to make arrangements under which they could ensure the provision of specialist advice, but the recommendation of the Royal Commission was accompanied by a proposal that the specialist service should be obtained by means of a pooling of surpluses. That was not a proposal which commended itself to the approved societies generally, and there was a considerable body of opinion in the House which supported the societies in their attitude. Therefore it was not possible to put it forward in this Bill. But they had perhaps made some little advance towards it by adding to the list of additional benefits in the First Schedule No. 16, which dealt with payments to approved charitable institutions where insured persons might get the benefit of specialist treatment, and as it had been represented that would perhaps a little unfair to the private practitioner or private specialist who ought to be allowed to give treatment if approved societies desired them to do so they had made an addition to Paragraph 8 by which a service of that kind should not be within the ordinary scope of medical benefit.

Mr. RHYS DAVIES said that the Bill as it stood was only an instalment of what they ought to get, but the Labour Party were anxious that the Bill should be passed and they would not divide against the third reading.

The Medical Profession and a Statutory Right.

Dr. VERNON DAVIES congratulated the Minister of Health and his department on the success which had attended the Bill which had caused great satisfaction throughout the country. There was perhaps one section of the community who had viewed the Bill with certain suspicions and were still not quite happy as to what might in future years be the result. He referred to the medical profession. Before the National Health Insurance scheme started there was a certain amount of friction and discussion between the approved societies and the medical men, and it was found necessary to include in the first Act certain statutory provisions concerning medical benefit. That statutory right had been retained by the medical profession up to the introduction of the present Bill. The Minister of Health had now withdrawn that statutory right and had given the profession the promise of Departmental Regulation instead. The medical profession, rightly or wrongly, felt that a statutory provision was of very much more value to them than any Departmental Regulation. He had tried to get that view accepted by the Standing Committee, but he had failed. The medical profession therefore viewed the measure with slight misgiving, although they had absolute confidence in the present Minister of Health. They recognised that he would hold the scales absolutely fairly between the medical profession and the approved societies, but the time might come when Mr. Chamberlain would no longer be the Minister of Health, and then the medical profession would be more or less in the hands of a gentleman who might hold different views. It was quite possible that a future Minister of Health might honestly and sincerely think that the proper way would be for the coöperative societies to start a clinic, either for eyes, ears, nose, and throat, and then appoint their own doctor. Under the Act such a minister would be empowered to make regulations to enable that to be done. If such an unfortunate course ever happened it would arouse again all that antagonism between the approved societies and the medical men which was so prevalent in 1911. That was a thing which the medical profession were particularly anxious to avoid. They were anxious that the National Health Insurance scheme should be a success, and that the insured person should receive its full benefits. That could only be done by hearty coöperation between the approved societies, the medical profession, and the State, all working equally for the good of the insured population. They had to recognise that there had been difficulties, and he only hoped that the Minister by his action had not increased those difficulties;

but that he might be right in expecting that the present scheme would be a success, and that the suspicions of the medical profession had not been justified.

Specialist Services.

Dr. SHIELS said he quite agreed with what had been said as to the merits of the Bill as far as it went, but he thought they had a very reasonable complaint that it did not go far enough. As an expression of the recommendations, or as an application of the recommendations of the Royal Commission it was extremely inadequate. It was quite well known that the Royal Commission placed great importance on specialist services, and Mr. Chamberlain had indicated that he also placed the same value on them. It was true the approved societies were not enthusiastic about the proposal of the Royal Commission for providing specialist services; but if that was a right proposal why did the Minister of Health not seek to carry it out? Sir Walter Kinnear, who had control of the Insurance Section of the Ministry of Health, and who was a very great authority, emphasised two years ago that there was an urgent demand and a proved necessity for specialist and consultant services. Sir Walter Kinnear urged the importance and necessity of pooling as the Royal Commission suggested. While no doubt there had been great difficulties, he (Dr. Shiels) thought the Minister had been guilty of a lack of courage in not tackling this question. As long as these services were not provided the National Health Insurance scheme must be considered to be giving to the great mass of the population an incomplete and inadequate medical service. Attempts had been made in the Standing Committee to ensure that the wives of insured persons should have in confinement adequate midwifery services. The Minister of Health and the whole of his department were extremely sympathetic on this subject, and had in hand various schemes dealing with the matter. He understood that some effort was being made to achieve progress in this connexion. While the problem of maternal mortality was very complicated and difficult, everyone was agreed that one thing to be done was to provide adequate midwifery attendance at the time of confinement. It had always been the practice up to now that dental benefit, like other additional benefits, was not provided until five years' membership had elapsed. The result was that they had a very extraordinary position. They had a very inadequate school dental service through which a child could get dental treatment up to the age of 14, and then from the age of 14 to 16 and up to 21 years there were seven years before an effective method of dental service was provided. Dental service should be given early, because it saved a great deal of subsequent treatment. The unfortunate thing was that the present dental service for insured persons consisted almost entirely in taking out teeth and supplying dentures, instead of the service being, as it ought to be, that of stopping and making minor adjustment which would prevent these more serious things being required afterwards. Apart from economy in dental service such treatment would be an economy from the point of view of general health. He had made representations on that matter to the Minister, and he was glad to say that they were being favourably considered. If something could be done on these lines they would have very much greater satisfaction in this Bill, because there was a tendency to concentrate too much in the health insurance scheme on the financial side, and on the side of cash benefits, rather than on the provision of an efficient and comprehensive medical scheme for the insured person.

A Balanced Measure.

Lieut.-Colonel FREMANTLE said if they would look at the way in which the insurance funds were distributed they would find that the first seven of the new additional benefits were cash benefits. All the way through the cash benefits loomed infinitely larger than the benefits in kind.

Hon. Members: Why not?

Lieut.-Colonel FREMANTLE said that the reason was that this was a balanced measure for the improvement of the health of the people. It was balanced between two things—the need of giving financial relief at the time of distress, and the need of giving technical treatment for the cure, and still more for the prevention of the causes of that distress. It was that combined purpose which was the basis of the insurance scheme originally. If it ever led in other directions it was failing in its purpose. He feared that in the scheme now there was too much given in free cash distribution, and not enough in actual treatment. He particularly wanted to show how that applied to maternity. The statutory benefit was originally 30*s.* for maternity, and no professional attendance. That was increased to 40*s.* in maternity benefit and no treatment. It had been increased still more. It was commonly understood that the average was 46*s.* and no treatment. They knew that these people who received this money did not get the best treatment that could be provided, or such treatment as was intended. It was with regard to this question of the rearrangement of the cash benefits under the Bill that those who looked after the health of the community were concerned. They hoped that they might get more and more a professional and proper use made of the National Health Insurance funds, and it was in that hope that they welcomed this Bill as a steady step forward towards the improved health of the people.

The Bill was read a third time.

Board of Survey and Naval Invaliding Cases.

Mr. HORE-BELISHA asked the First Lord of the Admiralty in how many cases the commander-in-chief accepted the decision of the board of survey in invaliding cases in the last 12 months; and in how many cases he overruled the recommendations of the board of survey.—Lieut.-Colonel HEADLAM, Parliamentary Secretary to the Admiralty, replied: So far as I am aware the commanders-in-chief have accepted the decisions of the boards of survey in all cases of invaliding during the last 12 months.

Decrease in Birth-rate.

Mr. THURTLE asked the Minister of Health the average number of births per day for the first quarter of 1928; and whether this average figure represented an increase or a decrease on the corresponding figure for the first quarter of the preceding year.—Sir KINGSLEY WOOD replied: On the provisional figures at present available there were on an average 1847 births registered per day during the first three months of 1928. This figure represents a decrease on an average of eight births per day on the corresponding figure for the first three months of 1927.

Production of Government Lymph.

Mr. RENNIE SMITH asked the Minister of Health how many calves had been used during the past 12 months in connexion with the Government lymph factory at Hendon for the production of lymph.—Sir KINGSLEY WOOD replied: 421 calves were used at the Government lymph establishment for the production of lymph during the year ended March 31st last.

State Grants for Additional Insurance Benefits.

Mr. RHYS DAVIES asked the Minister of Health the amount of the State grant on each of the additional benefits paid by approved societies for the years 1925, 1926, and 1927 respectively.—Mr. CHAMBERLAIN replied: The approximate amount of the State grant on each of the non-cash additional benefits paid by approved societies in England and Wales for the years specified is as follows:—

Description of Benefit.	Amount of State grant.		
	1925.	1926.	1927.
	£	£	£
Dental	97,150	185,590	438,300
Ophthalmic	12,860	25,250	53,510
Hospitals	48,760	37,090	36,760
Convalescent Home Treatment	1,600	7,020	15,950
Surgical Appliances	3,090	5,490	9,520
Want or Distress	1,020	1,380	1,610
Nursing	1,380	1,150	730
Providing Convalescent Homes	1,540	1,570	720
Repayment of Contributions ..	1,620	2,080	2,200
Total	£169,020	£266,620	£559,300

As the cost of additional benefits which take the form of increases of ordinary cash benefits (sickness, disablement, and maternity) is not separately recorded, the amount of the State grant thereon cannot be stated.

THURSDAY, MAY 24TH.

Boards of Guardians and Vaccination.

Mr. LANSBURY asked the Minister of Health whether he was aware that an official medical man at Romford intimated to the guardians and press representatives that they would have to be vaccinated before attending a meeting of the board of guardians recently or undertake to remain in the institution 11 days; and whether such action was in accordance with the Ministry's regulations and orders under which boards of guardians carried on their duties.—Mr. CHAMBERLAIN replied: The hon. Member appears to have been misinformed. An intimation was given to the guardians that it would not be wise for them to visit the guardians institution, in which a case of small-pox had occurred, for the time being, and that it was advisable that guardians attending meetings of the board or committees should be vaccinated; but the notice to which reference has been made in the press was not in fact given. In these circumstances the latter part of the question does not arise.

Persons Entitled to Health Insurance Benefits.

Mr. DAY asked the Minister of Health the estimated number of persons entitled to benefits under the National Health Insurance Acts at Dec. 31st, 1927, or last convenient date, showing the number of men and women who were on the register of approved societies at that date.—Mr. CHAMBERLAIN replied: The number of persons entitled to benefits under the National Insurance Acts at Dec. 31st, 1927, in England and Wales was approximately 14,260,000, of whom 9,210,000 men and 4,620,000 women were on the registers of approved societies. These numbers are exclusive of persons over 65 years of age who ceased on or before Jan. 2nd, 1928, to be entitled to sickness and disablement benefits.

Nursery and Open-air Schools for Delicate Children.

Mr. HOLLINS asked the President of the Board of Education the number of local education authorities which had established nursery schools, open-air residential schools, open-air schools, and schools for mentally defective children, and the respective percentages to the total number of local education authorities, and whether he would consider the desirability of collaborating with the Minister of Health in coördinating the services in respect of mentally defective and delicate and tuberculous children.—Lord EUSTACE PERCY replied: The following is the information asked for. The table shows the number of local authorities who have established schools of the types mentioned:—

	Local authorities.	
	Number.	Percentage of total number.
Nursery schools	8	2·5
Residential open-air schools.. ..	10	3·1
Day open-air schools	41	12·9
Residential schools for mentally defective children	7	2·2
Day schools for mentally defective children	75	23·6

The figures for open-air schools relate only to schools for the education, under open-air conditions, of delicate and debilitated children suffering from non-infectious conditions, including open-air schools which provide medical treatment and care. In addition in a number of areas such as London and Manchester, classes more or less on open-air lines, attached to public elementary schools, have been started for young or delicate children. Residential schools for both mentally and physically defective children are, of course, attended by children from a considerable number of areas. The hon. Member will find details in the Official List (42) of Certified Special Schools. As regards the last part of the question arrangements for coördination in respect of the services referred to already exist between my department, the Ministry of Health, and the Board of Control.

Revision of Washington Hours Convention.

Sir NICHOLAS GRATTAN-DOYLE asked the Minister of Labour whether any statement would be made at the forthcoming meeting of the Governing Body or at the annual session of the International Labour Conference of the position of the Government in relation to the Washington Hours Convention.

Lord Henry CAVENDISH-BENTINCK asked the Minister of Labour whether the Government had drawn up its detailed proposals for the revision of the Washington Hours Convention; if so, whether those proposals had now been communicated to the International Labour Office; and if he would announce what these proposals were.—Mr. BETTERTON, Parliamentary Secretary to the Ministry of Labour, replied: Since I stated the position of the Government to the Governing Body in February, they have adopted a form of procedure for the revision of draft International Labour Conventions. At the meeting next week His Majesty's Government will press for the application of this procedure to the Washington Hours Convention at the earliest opportunity, and if that proposal is adopted they will be prepared in due course to announce in detail their views as to the form that revision should take.

Supply of Milk at Maternity and Child Welfare Centres.

Mr. MALONE asked the Minister of Health for what reason he had issued a circular to the maternity and child welfare centres instructing them that no milk was to be given to mothers and babies where the family was in receipt of poor-law relief; what was the amount spent on milk by the maternity centres throughout the country; and what was the total amount spent on the maternity and child welfare centres, both by way of grant from the Exchequer and by the local authorities; whether the guardians were authorised to spend money on milk for expectant and nursing mothers over and above relieving actual destitution; and whether he was aware that when the guardians made an allowance for milk they were obliged to allow the full retail price of milk, whereas the maternity centres were able to obtain milk for distribution under contract at a reduced price.—Mr. CHAMBERLAIN replied: No such circular has been issued, but I have suggested to certain of the maternity and child welfare authorities that they should reconsider their procedure in dealing with applications for milk and refer applicants who are in receipt of poor-law relief to the guardians, in order to avoid overlapping and waste. As regards the last two parts of the question, it is competent for the guardians in giving relief to decide, on the advice of their medical officer, whether any special need is present, and if so to take account of that need in determining the amount and form of relief. The guardians are in no worse position than a maternity and child welfare authority because they can also purchase milk by contract for distribution to those in receipt of relief.

Institutional Treatment of Tuberculous Children.

Mr. HOLLINS asked the Minister of Health the number of local governing bodies, and the percentage of the whole, which had made provision for the institutional treatment of tuberculous children and mentally deficient children; and whether the education of the children was continued during the time they were in the institution.—Mr. CHAMBERLAIN replied: All tuberculosis authorities include in their schemes for the treatment of tuberculosis provision for the institutional treatment of tuberculous children. Of the 125 local authorities under the Mental Deficiency Acts 21 have made direct provision of institutional accommodation for children, and others have made provision for the accommodation of children by contracting either with the managers of privately-owned institutions or with poor-law authorities. Education is provided for tuberculous children who make more than a brief stay in a sanatorium, and education and training suited to their capacity is in all cases provided for mentally deficient children while they are under care in an institution.

Use of Small-Pox Hospitals as Tuberculosis Sanatoriums.

Dr. VERNON DAVIES asked the Minister of Health if he would state how many small-pox hospitals in this country had during the last three years been used as sanatoriums for tuberculosis cases; in how many of these hospitals had the authorities had to discharge their cases of tuberculosis in order to admit cases of small-pox; was he aware that some of the tuberculosis cases had had to return to their homes as no sanatorium accommodation could be found for them; and what steps he proposed to take to deal with this situation.—Mr. CHAMBERLAIN replied: Twenty-one small-pox hospitals have been used during the past three years for the treatment of tuberculosis, in one case for the summer months only. Tuberculous patients have been removed from six of these hospitals in order to provide accommodation for small-pox cases. Of these six at least three will not again be used for the treatment of tuberculous patients, alternative accommodation having been provided or being in course of provision. I am aware that there is some disadvantage attaching to the use of small-pox hospitals for tuberculous patients, but when it is necessary for these hospitals to revert to their original use every effort is made to find other accommodation for the displaced patients. It is primarily a matter for the local authorities to consider what steps should be taken to avoid the possibility of some of these patients having to return to their homes.

Prescriptive Standard of Grade A Milk.

Mr. FENBY asked the Minister of Health if he was aware that it was possible in England and Wales for a producer of Grade A milk which was below the prescriptive standard required to continue to sell such milk without the local authority having power to withdraw the licence; whether he was aware that in Scotland, if such standard failed to reach the prescriptive standard required for the purposes of the Food and Drugs Act, the licence could be withdrawn and if he would take steps so that the same powers should obtain in England.—Mr. CHAMBERLAIN replied: It is possible in the case of Grade A milk, as of other milk, for an unadulterated sample to fall below the presumptive limits laid down for the purposes of the Sale of Food and Drugs Acts, and in such cases a prosecution under those Acts can be undertaken by the local authority if the facts appear to justify that course. I see no reason for thinking that a power to withdraw a licence would be more effective in securing that Grade A milk is kept up to the presumptive standard.

Voluntary Societies and Slum Clearances.

Viscount SANDON asked the Minister of Health whether he was aware of, and could render any assistance to, the societies which had been organised in various parts of the country for the purpose of undertaking on a voluntary basis schemes for the improvement and clearance of slum areas and the provision of houses at low rentals.—Mr. CHAMBERLAIN replied: I am aware of the valuable work which is being undertaken by these societies. In connexion with their schemes for the erection of new houses it is open to the societies to apply to the local authorities for subsidy under

the Housing Acts of 1923 and 1924 in respect of houses which comply with the conditions laid down. I shall always be pleased to render any assistance possible towards furthering the objects of these societies.

Building on Site of Foundling Hospital.

Sir JAMES REMNANT asked the Minister of Health whether he was aware that the Foundling Estates, Limited, had submitted plans for building on the site of the Foundling Hospital, including a new road which would encroach on the Mecklenburgh and Brunswick garden squares; that the proposed road would cut through the garden enclosures of Caroline-place and Lansdowne-place; and that buildings on the north frontage of Guilford-street would involve the removal of large portions of these two garden enclosures; when he proposed to resume the public inquiry into the London County Council, Holborn and St. Pancras town-planning scheme, adjourned on Feb. 3rd, 1928; and would he exercise his powers to restrain the proposed encroachment upon the garden squares and the destruction of garden enclosures.—Mr. CHAMBERLAIN replied: I have not details of the submitted plans, but the approval of plans for building on the site of the Foundling Hospital rests with the London County Council, and I have no power to prohibit the approval. I have communicated with the London County Council on the town-planning proposals and the resumption of the inquiry depends on whether the Council decide to proceed with the town-planning scheme so far as it applies to the site of the Foundling Hospital.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

CITY OF LONDON.

Dr. W. M. Willoughby, who was appointed medical officer of health on May 17th, has been in charge of the department since Dr. W. J. Howarth's retirement and presents the annual report for 1927.

He states that among the small night population of the city, estimated at 13,010, there were 114 births (birth-rate 8·7) and 150 deaths (death-rate 11·5). Twelve deaths occurred among infants (infant mortality-rate 105), including one death from diarrhœa. The tuberculosis death-rate was 0·92; the cancer-rate 1·84; the respiratory rate, including two deaths from influenza, 1·4, and the rate from heart diseases 2·3. The single maternal death from childbirth was attributed to puerperal sepsis.

The density of the night population was estimated at 19·8 persons per acre, and of the day population, of persons actively engaged in the city, 644·1 per acre.

In view of the biennial epidemic of measles due at the end of 1927 and the beginning of 1928, a warning leaflet was issued through the teachers of the day schools and Sunday schools and the infant welfare centre. At the tuberculosis dispensary, established at St. Bartholomew's Hospital, more use was made of artificial pneumothorax, which was induced in 9 cases with 182 refills. Dr. Willoughby agrees with the city tuberculosis officer, Dr. F. H. Young, that for a large proportion of tuberculous patients employment in a factory especially devoted to them is the only solution. Dr. Willoughby also expresses his approval of the proposal to establish a permanent smoke prevention advisory committee for greater London. The figures given indicate that cremation is gradually gaining ground in this country, but not so rapidly as in Czecho-Slovakia, Scandinavia, Switzerland, and Germany.

Out of 41 milk samples biologically tested on guinea-pigs, 2 gave a positive result for tubercle. Milk samples found unsatisfactory on account of dirt content are reported to the medical officers of health of the districts concerned. Thirty samples of butter served with bread or scone were taken and successful proceedings were instituted in connexion with one sample certified to consist of margarine. Proceedings were also taken with regard to preservative powders used for sausages which were found to contain boric acid. In the case of a sample of margarine containing boric acid and of tinned peas containing sulphate of copper time was given for the disposal of old stock. Inspection showed that the regulations for the cleansing of empty milk churns was receiving satisfactory attention.

Importation and Inspection of Meat.

Interesting figures are given with regard to meat from the Board of Trade statistics. Thus, of 671,796 tons of imported beef 577,916 came from Argentina; of 276,845 tons of imported mutton 136,866 came from New Zealand; of 25,229 tons of pork 15,867 came from the Irish Free State; and of 423,456 tons of bacon 254,080 came from Denmark. The demand for chilled beef as against frozen increases; thus there was an increase of 36,000 tons of "chilled" and a decrease of 25,000 tons of "frozen." The importation of live cattle from South Africa, Canada, and the United States of America is disappearing. Thus the figures for 1927 were 629,001 from the Irish Free State, 7669 from Canada, and 198 from South Africa. This is partly due to the increasing demand and the high prices obtained for imported cattle in the U.S.A. It is suggested that if the U.S.A. opens its ports to chilled beef from South America there would be a rise in the price of Argentine meat at Smithfield which would act as an incentive to British and Irish farmers to produce more home-fed animals. In 1927 there was an increase from Britain and Ireland in the Smithfield returns of 9333 tons of beef and veal, 6722 tons of mutton and lamb, and 14,545 tons of pork and bacon. Much attention has been given to the supply of fresh pork from Ireland and to the instruction of Irish consignors as to the exact type of carcass required at Smithfield.

The question of tuberculous lesions in pig carcasses has been investigated by Dr. Stanley Griffith and Mr. Cornell of the comparative pathology department, Cambridge, and it has been found that 30 per cent. of the lesions examined contained tubercle bacilli of the avian type. A warning is therefore given to pig-feeders that tuberculous infection to pigs may arise from at least four sources—namely: (1) feeding on cow's milk containing bacilli; (2) suckling a sow with diseased mammæ; (3) feeding in pastures with infected cows; (4) feeding with fowls, many of which may be tuberculous.

It is inferred from the amount of diseased meat deposited at Smithfield that many local authorities do not enforce the Public Health (Meat) Regulations, 1924. One inspector, who called at the market, admitted the impossibility of carrying out the regulations, as he had 29 private slaughter-houses to supervise in addition to his other duties. The National Federation of Meat Traders recognised that honourable traders are the losers by this unequal inspection, and ask for a systematic form of inspection throughout the country. Caseous lymphadenitis in Australian sheep carcasses continues to give trouble and shows some increase in New Zealand carcasses and also in Chilian mutton. The Chilian Government, in consequence, have decided to establish a veterinary meat inspection service and temporarily appointed four well-qualified British veterinary officers to go out to Chili to initiate the new service. Much attention is being given to the 1924 regulations, which deal with the more cleanly handling and transport of meat.

A Housing Scheme.

During the year Windsor House, Shepherdess-walk, was completed in accordance with plans prepared by the city engineer and opened. Dr. Willoughby expresses his regret that ill-health and resignation had made it impossible for Dr. Howarth to see through to its fruition the scheme which he had instituted as far back as 1919 for the improvement of the Hutchison-street area. Windsor House covers nearly two acres; the centre of the square is a big garden for adults, while round the whole of the site is a spacious playground for children. The building comprises 104 flats, consisting of two, three, four, and five rooms respectively with a total accommodation for 600 persons. The cost with the land was about £116,000 and has been borne by the City Corporation without assistance from the National Exchequer.

Rat Repression.

Much attention has been given to rat repression from every point of view. One difficulty is that the

law looks to the occupier to provide the remedy, and it is, of course, quite unreasonable to expect an occupier to go to great expense in rendering a building rat proof. The use of bacterial virus has raised some points of interest. Thus the virus used by certain tenants at the Central Meat Market was examined by the city bacteriologist in 1913 and found to be inert. This justifies the efforts of the Danish Government, reported in our columns recently, to keep their bacterial virus at a high pitch of virulence, by the employment of a skilled bacteriologist. Again in 1920 several of the viruses used appeared to be *Bacillus enteritidis* (Gaertner) and raised the question of the possibility of the infection of human food. Of the various kinds of traps used the "break-back" traps appear to give good results, but the varnish traps are best of all. It is pointed out in the report that there is no law to control the use of many deadly raticides such as strychnine, arsenic, and phosphorus.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 19TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 336 (last week 319); scarlet fever, 1717; diphtheria, 999; enteric fever, 53; pneumonia, 1333; puerperal fever, 42; puerperal pyrexia, 109; cerebro-spinal fever, 5; acute poliomyelitis, 5; acute polio-encephalitis, 5; encephalitis lethargica, 20; dysentery, 6; ophthalmia neonatorum, 104. No cases of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 25 counties: London, 10 (Islington 1, Lambeth 1, Wandsworth 7, Woolwich 1); Bedford, 1; Berks, 1; Chester, 1; Derby, 9; Durham, 72 (Gateshead 24, South Shields 39); Essex, 5 (Leyton 4, Wanstead 1); Lancaster, 16; Leicester, 1; Lincoln, parts of Kesteven 5, parts of Lindsey 2; Middlesex, 3; Norfolk, 1; Northumberland, 15; Nottingham, 18; Soke of Peterborough, 1; Somerset, 2; Stafford, 29 (Walsall 21, Stoke-on-Trent 8); Surrey, 8 (Kingston-on-Thames 7, Reigate 1); Warwick, 3; Yorks, North Riding 5, West Riding 66; City of York, 7; Glamorgan, 12; Monmouth, 43.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 22nd–23rd was as follows: Small-pox, 30; scarlet fever, 1640; diphtheria, 2099; enteric fever, 31; measles, 1052; whooping-cough, 150; puerperal fever, 13 (plus 13 babies); encephalitis lethargica, 68; "other diseases," 19. At St. Margaret's Hospital there were 16 cases of marasmus, and 9 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there were no deaths from small-pox, 5 (2) from enteric fever, 60 (24) from measles, 11 (1) from scarlet fever, 46 (10) from whooping-cough, 27 (7) from diphtheria, 33 (7) from diarrhœa and enteritis under two years, and 65 (11) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Salford, West Hartlepool, and Sunderland. Of the 36 fatal cases of measles outside London 5 were reported from Sheffield. Of the 36 fatal cases of whooping-cough outside London 6 were reported from Birmingham, 5 from Liverpool, and 5 from Manchester. During the same week 19 deaths from whooping-cough were reported from Glasgow.

Hitherto the record of deaths from small-pox published in the weekly returns has been restricted to cases in county boroughs and the great towns. In future a supplementary statement will be issued each month giving particulars of deaths in other areas. Thus during the month of April there were outside London and the great towns 4 deaths certified as due to small-pox, either as principal or contributory cause. These were assigned to Malling R.D., Lichfield M.B., Royal Leamington Spa M.B., and Honley U.D.

The number of stillbirths registered during the week was 305 in the great towns—corresponding to a rate of 44 per 1000 births—including 59 in London.

MEDICAL TOUR IN ITALY.—A visit of foreign medical men to Italian spas will take place from Sept. 5th to 21st next. Further information may be had from the Italian Travel Bureau, 16, Waterloo-place, London, S.W. 1

Obituary.

SIR JAMES HODSDON, K.B.E., F.R.C.S. EDIN.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF EDINBURGH.

WE regret to announce the death of Sir James Hodsdon, Consulting Surgeon to the Royal Infirmary, Edinburgh, and formerly President of the Royal College of Surgeons of Edinburgh. He was found dead early on Tuesday morning last in his sleeping-berth on the train by which he was returning to Edinburgh after attending the recent session of the General Medical Council as representative of the Edinburgh College and a member of the Dental Board.

James William Beeman Hodsdon was born in 1858 and received his early education at Sherborne School, whence he proceeded to Belfast, entered Queen's College, and graduated in medicine at the Queen's University in 1881; simultaneously he took the Scottish conjoint qualifications, proceeding in 1883 to take the Fellowship of the Royal College of Surgeons. He then took advantage of unusual opportunities, and carried out much post-graduate work in Paris, Vienna, and London, and returning to Edinburgh was appointed lecturer on clinical surgery at Surgeons' Hall. This appointment was followed by election to the staff of the Royal Infirmary, the great charity which he served for the rest of his life, being at the time of his death the senior consulting surgeon. At the Infirmary he made for himself a high reputation both as clinical worker and as a remarkably clear and effective teacher, and these qualities were recognised by many educational bodies and led to frequent demand for his services as an examiner; in this capacity he was retained at different times by the Universities of Edinburgh, Durham, and Belfast, as well as by the Royal College of Surgeons of Edinburgh, while for a time he acted as chairman of the committee of management of the Scottish Conjoint Board.

As might be expected, his opinions were always received on the General Medical Council with respect, for he had been a member for 22 years, being chosen by the College of Surgeons in 1906 to represent the Corporation in succession to Sir Patrick Heron Watson. His long experience, both as surgeon and teacher, gave him a position from which to express all-round opinions and to look at medico-political questions in the large, and he will be greatly missed by the Council, and at the Dental Board—all the more because of his invariable and quiet courtesy.

In 1914 Hodsdon was elected President of the Royal College of Surgeons of Edinburgh, and at the outbreak of War took a commission as Major R.A.M.C. (T.), being attached to the 2nd Scottish General Hospital. At the close of hostilities, and after repeated mention in despatches, he was made C.B.E. (military), and in 1920 K.B.E. (civil).

Although he was the author of papers on various surgical subjects he was not a man who took readily to literary expression. But his contributions to the Edinburgh Hospital Reports, and the *Edinburgh Medical Journal*, made early in his career, were practical pieces of work, and his record of an experimental inquiry into the influence of the pulmonary blood pressure upon the collapsed lung, published in our own columns, attracted serious attention.

Hodsdon was 70 years of age at the time of his death, though he looked, at any rate until recently, much younger, and the uninterrupted manner in which he discharged his public duties, both on the General Medical Council and the Dental Board, had made his sudden death a shock to many. But at the close of the recent session of the Council it was evident that he was in considerable suffering, and it was contrary to advice that he undertook the long journey on which he died.

Medical News.

UNIVERSITY OF LONDON: *University College.*—Examinations for a Bucknill scholarship and for two exhibitions will begin on June 26th, the subjects of examination being chemistry, physics, botany, and zoology. Candidates' entries, in proper form, should reach the secretary of the College before June 9th.

UNIVERSITY OF SHEFFIELD: *Centenary of the Medical School.*—Although for some years previously there had been medical education of a kind in Sheffield, the present medical school dates from July, 1828, when the foundation of the Medical Institute in Arundel-street was laid, and a medical school with a corporate governing body first came into being. The Faculty of Medicine of the University of Sheffield has therefore decided to celebrate the centenary of the medical school this year, and on July 11th a congregation will be held, at which the Chancellor (the Marquis of Crewe) will receive delegates from the medical faculties of other universities, by whom addresses will be given. Past and present students of the medical school, as well as members of the medical profession in Sheffield and district, and others interested in the welfare of the school, are invited to attend. To mark the occasion the Faculty is about to publish a history of the medical school in Sheffield, written at its request by the late Dr. W. S. Porter.

THE FORTHCOMING CANCER CONFERENCE.—The provisional programme of the International Conference on Cancer, to be held from July 16th to 20th, has been framed. The mornings will be devoted alternatively to general and sectional discussions. Of the former two sessions will be held concurrently at different places—namely, the House of the Royal Society of Medicine and the College of Nursing, on July 17th and 19th, these buildings being conveniently near together. The list of speakers who have promised to contribute to the discussions is impressive. Under the presidency of Sir John Bland-Sutton, Prof. C. Regaud will open the debate on the relative values of surgery and radiation in the treatment of cancer of various regions. Prof. G. Doderlein and Mr. Malcolm Donaldson will deal with the cervix uteri, Sir Charles Gordon-Watson, Mr. W. E. Miles, and Mr. P. Lockhart-Mummery with the rectum, Prof. Burton Lee, Mr. Sampson Handley, and Mr. G. Keynes with the breast, and Dr. D. Quick, Mr. Stanford Cade, and Mr. Douglas Harmer with the buccal cavity. Prof. J. Ewing will open a discussion on the ætiology of cancer, to be followed by Prof. F. Blumenthal, Prof. A. Borrel, Prof. Rhoda Erdmann, and Prof. H. T. Deelmann. Chemotherapy will be discussed by Prof. W. Blair Bell, Prof. F. Carter Wood, Dr. T. Lumsden, and Dr. Burton Simpson. The special sections, to meet on July 18th and 20th, are concerned with radiology, surgery, medicine and diagnosis, pathology, statistics, and public health. In the radiology section biological effects of radium and X rays, with special reference to the factors of wave-length, intensity of radiation, and duration of exposure will be discussed on the first day, Prof. S. Russ presiding, whereas the second day will be devoted to the effects of radium and X rays on the blood vascular and lymphatic systems. In the surgery section the classification and treatment of bone sarcoma will be the subject of communications by Prof. Ewing and Mr. Sampson Handley; while Sir Berkeley Moynihan will address the section on the early recognition and treatment of cancer of the stomach, and will be followed by Mr. Gordon Taylor, Mr. A. J. Walton, Dr. E. I. Spriggs, Dr. A. F. Hurst, Prof. M. Stewart, and Prof. D. P. D. Wilkie. In the section of medicine on July 18th Sir Thomas Horder will consider cancer criteria, and Dr. Hutchison the frequency of intrathoracic tumours, while on July 20th Sir Thomas Horder and Sir William Willcox will open the discussion on diagnostic methods; Dr. A. Leitch will give an address to the pathology section on occupational cancer, and will be followed by Dr. A. Scott, Mr. A. H. Southam, Dr. W. J. O'Donovan, Prof. Schmorl, Dr. A. Sladden, and Dr. L. Cavatard. Prof. M. Greenwood will speak at a joint session of the pathology, statistics, and public health sections on geographical and racial prevalence of cancer. Contributors to other meetings of the statistics and public health section include Dr. T. H. C. Stevenson, Dr. C. Bridge, Dr. S. A. Henry, Prof. de Vries, Dr. Hoffman, Dr. E. L. Kennaway, Prof. E. L. Collis, and Dr. Janet Lane-Claypon. Sir George Buchanan will give an address on public action in regard to cancer. In the afternoons visits will be paid to hospitals and institutions, a liaison officer being appointed who will have charge of each party. Further information may be obtained from the chairman of the Executive Committee, Mr. Cecil Rowntree, at 9, Upper Brook-street, London, W. 1.

UNIVERSITY OF OXFORD.—Sir Farquhar Buzzard, Regius Professor of Physic in the University, has been elected an honorary Fellow of Magdalen College, of which he was formerly a commoner.

THE President of the French Republic has conferred the Cross of Officier de la Légion d'Honneur on Dr. George H. F. Nuttall, F.R.S., Quick Professor of Biology in the University of Cambridge.

ROYAL MICROSCOPICAL SOCIETY.—The annual Pond Life and General Microscopical Exhibition will be held at 20, Hanover-square, London, W., on Wednesday, June 6th, at 7.30 P.M.

NURSES' MISSIONARY LEAGUE.—An At Home of the League will be held on Thursday, June 7th, at 3.15 P.M., at the Church House, Great Smith-street, London, S.W. 1. Sir Maurice Craig will take the chair and the Bishop of Blackburn will give an address. Invitation cards may be had from Miss Richardson, at 135, Ebury-street, London, S.W. 1.

NATIONAL INSTITUTE FOR THE DEAF.—A conference will be held at University College, Gower-street, London, on June 6th, to consider the claims of the deaf and dumb to higher education and technical training. It will be attended by delegates from universities, education authorities, special schools, and welfare societies for the deaf. Lord Charnwood will preside.

INTERNATIONAL DAIRY CONGRESS.—The programme has been issued of the Eighth World's Dairy Congress, to be held in England from June 26th to July 12th. Sessions will be held at the Central Hall, Westminster, from June 26th to 30th, and subsequently at Reading and in Scotland, At the Royal Agricultural Society's show at Nottingham, from July 10th to 14th, there will be special exhibits of dairy machinery.

ULSTER MEDICAL SOCIETY.—The sixth-sixth annual general meeting of this society was held in the Medical Institute, Belfast, on May 23rd, with Dr. J. C. Rankin, the President, in the chair. The following were elected to office for the session 1928–1929: President, Prof. T. H. Milroy; vice-presidents, Mr. S. T. Irwin and Dr. T. M. Tate; hon. secretary, Dr. R. M. Beath; hon. editorial secretary, Dr. J. A. Smyth; hon. treasurer, Dr. J. T. Lewis; hon. librarian, Dr. W. L. Storey; hon. assistant librarian, Dr. S. Simms. Council: Dr. F. M. B. Allen, Dr. W. Burns, Dr. A. J. Dempsey, Mr. P. T. Crymble, Dr. J. C. Loughridge, and Dr. J. W. Peatt.

THE INFANTS HOSPITAL, VINCENT-SQUARE.—The announcement last week of the great generosity of Sir Gomer Berry, the chairman of this institution, in giving £50,000 for the erection of a new maternity block makes timely some information concerning the immediate designs of the committee of management. The following are a few particulars with respect to the proposed enlargement of the hospital. A large site continuous with that of the existing hospital has been acquired in Vincent-square. It is about five times the size of the present site and will give ample room on an island area for the new buildings, which are designed to accommodate about 140 patients. There will be a complete surgical department, with operating theatres, enabling the surgery done in the hospital to be much extended in scope. The accommodation for the infants, who will be of the same age-limit as at present—i.e., up to 5 years—will be on the wardlet system; that is to say, that each baby will be isolated in some form of cubicle, largely consisting of glass, so designed as to prevent the conveyance of infection from one child to another. It is proposed also to construct the maternity block more or less on the same system. Each cubicle will have access to the balcony for open-air treatment. In orientation the building is designed to make the utmost use of natural sunlight, although provision will also be made for the supply of artificial sunlight. The out-patient, special, pathological, X ray, and orthopædic departments will be designed on the most up-to-date and approved systems. It is expected that the building and equipment of the proposed hospital will entail a cost of about £250,000. The maternity block, for the building of which Sir Gomer Berry's contribution of £50,000 is earmarked, is intended to accommodate about 36 lying-in women. The reason for including maternity cases is to ensure that the teaching facilities at the hospital shall afford experience in the feeding and treatment of new-born babies, and in connexion with this a new antenatal clinic is to be added. There will be ample space devoted to the housing of the staff of nurses and probationers that will be required in the enlarged institution.

Lieut.-Colonel J. W. D. Megaw, having been appointed Inspector-General of Civil Hospitals, Punjab, has relinquished his editorship of the *Indian Medical Gazette*, which he has held for the past seven years. Both here and as Director of the Calcutta School of Tropical Medicine he will be sincerely missed.

BRITISH INSTITUTE OF RADIOLOGY INCORPORATED WITH THE RONTGEN SOCIETY.—The following officers have been appointed: President, Mr. G. W. C. Kaye, D.Sc.; vice-presidents, Sir W. H. Bragg, F.R.S., Dr. Robert Knox, and Dr. L. A. Rowden; hon. secretaries, Dr. Stanley Melville and Mr. G. Shearer, D.Sc.; hon. editors, Dr. Robert Knox and Mr. G. W. C. Kaye. The medical members of the council are Dr. A. E. Barclay, Dr. G. B. Batten, Dr. R. M. Beath, Dr. N. Z. Finzi, Mr. C. T. Holland, Dr. J. E. A. Lynham, Major D. McGrigor, Dr. S. G. Scott, and Dr. J. Duncan White.

BELGRAVE HOSPITAL FOR CHILDREN.—Last year 1852 sick children were admitted to the wards of this hospital in Clapham-road, of whom 96 per cent. came from South London, and the remainder from adjacent districts. The out-patients' department dealt with 16,556 children under conditions so crowded that the medical and nursing staffs are greatly hampered and mothers and infants are kept waiting much too long. A site has been acquired near the hospital, large enough for the erection not only of a new out-patients' building sufficient to meet the possible demand for many years to come but also of a nurses' home. A ward of 12 beds is now available for the admission of children of parents of limited means at a fee of 3 guineas a week.

COMMITTEE OF INQUIRY ON LEAD-ETHYL PETROL.—The committee conferred on May 25th with Surgeon-General Cumming, the head of the Public Health Service of the United States of America. Dr. Leake, one of the senior officers of that Service, was also present. The extensive researches which have been conducted in America by the Public Health Service and others for the purpose of ascertaining whether there was any risk of lead poisoning by the use of ethyl petrol were fully discussed. A further meeting will be held in Room 61 on the second floor of H.M. Office of Works, St. James's Park, London, S.W. 1, at 11 A.M. on June 6th, for the purpose of taking evidence from Sir William Pope, F.R.S., Prof. H. B. Baker, F.R.S., and Prof. G. I. Finch. The proceedings at that meeting will be open to the public.

ROYAL MEDICAL BENEVOLENT FUND.—The total sum which has been voted this year in grants to medical men, their widows or orphans who have appealed for help amounts approximately to £4744, as against £3502 during the corresponding period of last year—an increase of £1242. These figures prove that there is a greater demand on the Fund this year that ever before; subscriptions and donations, however, do not show an equivalent increase, for over the same period they have only risen by £500. An urgent appeal is made for subscriptions and donations, which should be sent as soon as possible to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1. The following are notes on a few of the cases helped at the last meeting:—

Dr. H., aged 63. Had to give up practice three and a half years ago owing to cataract in both eyes. He is too blind to see patients and can do no work of any kind. During these last three and a half years he has had to maintain himself, his wife, and two young children on his small capital which is now exhausted. The Fund came to his help at the time he was being sued for his water rate and was unable to pay his rent which was in arrears. An emergency grant of £15 was made and a further sum of £40 voted. Assistance is being sought from other charitable funds.

Dr. W., aged 78. Old age and increasing deafness have prevented this applicant from continuing in the profession, and for some time he has been forced to live on capital. Other family troubles have made heavy financial claims upon him so that all his life savings are now exhausted and he has had to apply for the old-age pension of £26 a year. A nephew gives some help. Voted £40.

Widow, aged 56, of M.R.C.S., L.R.C.P. Owing to ill-health the applicant's husband sold his country practice ten years before he died, and from that time up to his death he and his wife had to live on capital. At his death the widow found there was nothing left; his life policies had been mortgaged years before; there were debts and no money to pay for the funeral. The widow had to sell furniture and other privatepossessions in order to meet the expenses. Her son, who is married and has one child, has been able to give a little assistance, but owing to bad trade he can now only contribute 10*s.* a week. Voted £26.

Daughter, aged 59, of M.D. The applicant has been teaching as a governess for 42 years, having started at the age of 17. Now at her present age she cannot get regular employment. Her savings bring in £50 a year. She was unable to save more as she had to help to keep her mother, who was an invalid for the last 12 years of her life. Voted £26.

WARWICKSHIRE MEMORIAL SANATORIUM.—Last week the Bishop of Coventry dedicated an altar and sanctuary which have been built on to the existing schoolrooms at this institution at Hertford Hill, near Warwick. When not in use the altar is divided by a movable screen from the remainder of the building which is used as a concert hall and cinema.

LONDON JEWISH HOSPITAL.—Additions to this hospital at Stepney Green have been opened by the Lord Mayor of London, Sir Charles Batho. The extensions include a children's ward of 12 cots, five separate rooms for accident and observation cases, an extensive casualty department, an X ray room, artificial sunlight and massage departments, accommodation for 35 nurses, and a restaurant.

THE LATE DR. H. M. WALLER.—Dr. Harry Mortlock Waller, who died at Nuneaton on May 16th at the age of 56, was at one time medical officer to the late Rajah of Sarawak and to the Sarawak Government. He qualified as M.R.C.S. Eng. from St. Bartholomew's Hospital in 1918 and was appointed medical officer to the Ministry of Munitions subsequently acting as medical referee to the Ministry of Pensions. He had lived at Nuneaton for the past three years.

DONATIONS AND BEQUESTS.—Among other bequests Mr. William Francis Paul, O.B.E., J.P., of Orwell Lodge Ipswich, left £2500 to the Ipswich and East Suffolk Hospital as to £2000 to endow a bed to be called the Orwell Lodge bed and as to £500 to Samaritan Society of the hospital 200 guineas to the Royal Surgical Aid Society; and £200 each to the Convalescent Home, Felixstowe, and the Croydon Hospital, Felixstowe.

PRESENTATION TO DR. D. S. DAVIES.—On May 24th the staff of the Bristol health department paid a warm tribute to Dr. D. S. Davies, who recently retired after 42 years as medical officer of health for the city. Dr. B. A. I Peters, who took the chair in the enforced absence of the new medical officer, Dr. R. A. Askins, spoke in appreciative terms of Dr. Davies not only as their late chief but as their friend. In particular he had shown the scientific spirit in medicine, and it was to be hoped that he would now have leisure to give the profession as a whole the benefit of his extensive knowledge of epidemiology. Dr. Peters then presented a writing bureau and bookcase to Dr. Davies who recalled, in returning thanks, some of the conditions of work at the beginning of his term of office. Forty-two years ago the only hospitals belonging to the public health authority were two wooden sheds in a stone-yard, one labelled "fevers," and the other "small-pox." When first they had built proper isolation hospitals it had been difficult to get parents to send their children for treatment; now they were not only willing but often insisted that they should be admitted. In conclusion Dr. Davies wished the members of the staff great success in the future under their new chief. After other tributes had been paid by Mr. Robinson, chief inspector, and Dr. J. C. Heaven, the proceedings terminated.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, June 4th.—8.30 P.M., SOCIAL EVENING. Fellows and guests will be received in the Library by the President and Lady Berry. At 9.15 P.M. Mr. C. Leonard Woolley will give an illustrated address on Recent Excavations at Ur of the Chaldees. Music and light refreshments. The Main Library will close at 5 P.M. but readers will be accommodated in other rooms until 6.30 P.M.

WEDNESDAY.—8.30 P.M., SURGERY. Annual General Meeting: Election of Officers and Council. Discussion on Hare-lip, to be opened by Dr. Victor Veau (Paris). Mr. C. H. Fagge, Mr. T. Pomfret Kilner, and others will speak.

FRIDAY.—5 P.M., OPHTHALMOLOGY. (Tea at 4.30 P.M. (Cases at 4.45 P.M.) *Papers* at 5 P.M. Mr. Montague Hine: Report on a Case of Neuro-fibromatosis of the Eyelid, and of a Case in which a Glass Ball Burst in the Socket. Mr. F. Ridley: Lysozyme-antibacterial Body Present in Great Concentration in Tears, and Especially its Relation to the Human Eye. Annual General Meeting at 6.15 P.M.: Election of Officers and Council. The Library will be open until 10 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
TUESDAY, June 5th.—5 P.M., Dr. Charles Bolton: The Interpretation of Gastric Symptoms. (First Croonian Lecture.)
THURSDAY.—5 P.M. (Second Croonian Lecture.)

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
MONDAY, June 4th.—1.30 P.M., Mr. R. J. Cann: Examination of the Pharynx.
WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Larynx.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.
TUESDAY, June 5th.—4 P.M., Mr. A. Tudor Edwards: Recent Advances in Surgery of the Chest.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.
THURSDAY, June 7th.—5 P.M., Sir Oliver Joseph Lodge The Uses We Make of the Ether of Space.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, June 5th.—4 P.M., Mr. Kenneth Walker: Treatment of Prostatic Obstruction.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, June 4th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Vascular Disease as it Affects the Central Nervous System.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: The Surgical Aspect of Compression Paraplegia.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: The Nervous Complications of Otitis Media.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Symonds: Familial Neuritis Muscular Atrophies.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, June 4th.—2.30 to 5 P.M., Medical, Surgical and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

NCOATS HOSPITAL, Mill-street, Manchester.
THURSDAY, June 7th.—4.15 P.M., Mr. Platt: Treatment of Fractures with Demonstrations.

NIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
TUESDAY, June 5th.—3.30 P.M. (at the Jessop Hospital), Mr. Stacey: Obstetrical Cases.
FRIDAY.—3.30 P.M. (at the Royal Hospital): Mr. Townrow: Clinical Cases.

ONDON CLINICAL SOCIETY.
THURSDAY, June 7th.—8.30 P.M. (at the London Temperance Hospital), Sir Berkeley Moynihan: Medicine in Art. (Macalister Lecture.)

Appointments.

TEY, D. H., M.S. Lond., F.R.C.S. Eng., has been appointed Surgeon to Out-patients at the Hampstead General and North-West London Hospital.

ALLEN, Florence, L.R.C.P. Lond., F.R.C.S. Medical Officer of Health, Nantyglo and Blaina Urban District Council, Mon.

HITELAW, A. D., M.B., Ch.B. Camb., D.P.H., Assistant Medical Officer of Health for Bradford.

rtifying Surgeons under the Factory and Workshop Acts: CRABTREE, H. V., M.B., Ch.B. Manch (Exeter); and CRAWSHAW, J. W., M.B., Ch.B. Manch. (Tyldesley, Lancaster).

Vacancies.

For further information refer to the advertisement columns.

berta, Canada, Municipal District of Woodford, No. 550, Onoway.—Municipal Doctor. 2000 Dollars.
Saints' Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. Sen. H.S. At rate of £200. Also H.S. At rate of £150.
hton-under-Lyne, Lake Hospital and Darnton House.—Med. Supt., &c. £300. Also Second Res. M.O. £150.
rmingham and Midland Eye Hospital, Church-street.—H.S. £110.
Burnley, Primrose Bank Institution.—Res. M.O. £300.
Cambridge University Pathological Laboratory.—John Lucas Walker Studentship. £300.
City of London Hospital for Diseases of Heart and Lungs.—Two H.P.'s. At rate of £100.
Coventry, Coventry and Warwickshire Hospital.—Res. H.S., also Res. H.P. Each at rate of £125.
Dorchester, Dorset Mental Hospital, Herrison.—Jun. Asst. M.O. £300.
Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.
Durham County Hospital.—Jun. H.S. At rate of £120.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obst. Asst. also 2 H.S.'s. each at rate of £50.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £150.
Hastings, Royal East Sussex Hospital.—Hon. Asst. Surg.
Hospital for Sick Children, Great Ormond-street, W.C.—Med. Reg. £250. Also H.P. and H.S. Each £50.
Hove, Lady Chichester Hospital.—H.P. At rate of £100, also Jun. At rate of £50.
Ipswich, East Suffolk and Ipswich Hospital.—Hon. Asst. Ophth. S.
King's College Hospital, Denmark Hill, S.E.—Jun. Aural S.
Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.
L.C.C. Mental Hospitals' Service.—Eighth Asst. M.O. £300.
Manchester Ancoats Hospital.—H.S. At rate of £100.
Manchester Babies Hospital, Burnage lane, Levenshulme.—Jun. M.O. At rate of £50.
Manchester, Baguley Sanatorium.—Asst. M.O. £350.
Manchester City.—M.O. £600.
Manchester Royal Infirmary.—Dickinson Research Travelling Scholarship in Medicine. £300.
Manchester Royal Infirmary.—Asst. M.O. to Dermatological Department. £20.
Margate, Royal Sea Bathing Hospital.—Two H.S.'s. Each at rate of £100.
Middlesex Hospital and Medical School.—Med. Registrar. £300.
Miller General Hospital for South East London, Greenwich-road, S.E.—H.P. At rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Nottingham City Mental Hospital.—Deputy Med. Supt. £650.
Oldham Royal Infirmary.—3 H.S.'s. Each at rate of £175.
Plumstead and District Hospital, High-street, S.E.—First Asst. M.O. £400.
Queen Mary's Hospital for the East End, E.—H.P.'s, H.S.'s, &c.
Royal Chest Hospital, City-road, E.C.—Med. Reg. £50.
St. Andrew's Hospital, Dollis Hill, N.W.—Res. M.O. At rate of £150.
St. Mary's Hospital, W.—Asst. Director to Surgical Unit. £750.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.
St. Thomas's Hospital Medical School.—University Chair of Dietetics. £1000.
Shrewsbury, Berrington Hospital.—Res. M.O. £200.
Southport General Infirmary.—Jun. H.S. £150.
South Shields, Ingham Infirmary.—Sen. and Jun. H.S.'s. £200 and £150 respectively.
Swansea Hospital.—H.S. £150.
University of London.—External Examinerships.
University of London, South Kensington, S.W.—Graham Scholarship in Pathology. £300.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.
Willesden General Hospital, Gynæcological Out-Patient Dept.—Clin. Asst. Surgical Out-patient Dept. 2 Clin. Assts.

Births, Marriages, and Deaths.

BIRTHS.

BUSH.—On May 25th, at 5, Lansdown-place, Clifton, Bristol, the wife of Dr. Gilbert Bush, of a son.
GOOD.—On May 24th, at Farquhar-road, Edgbaston, the wife of Dr. J. Percy Good, of a son.
ROACHSMITH.—On May 22nd, wife of Dr. C. E. Roachsmith, of Landguard, Sawbridgeworth, Herts, of a son.
STIRLING.—On May 15th, at Corringway, Golders Green, N.W., the wife of Major A. Dickson Stirling, D.S.O., R.A.M.C., of a daughter.

MARRIAGES.

MCALLEY—JONES.—On May 19th, at Normacot Church, Longton, Staffs., Robert Ian McAlley, M.B., Ch.B., to Grace Ivernah, only daughter of Mr. Albert E. Jones, Lightwood Chase, Longton, Staffs.

DEATHS.

HODSDON.—Suddenly, on May 28th, Sir James Hodsdon, K.B.E., M.D., F.R.C.S.E., of 6, Chester-street, Edinburgh.
LAWRENCE.—On May 22nd, at 66, Portchester-road, Bournemouth, Sidney Cameron Lawrence, M.B., D.P.H., late M.O.H., Edmonton.
LONGFIELD.—On May 23rd, at Plymouth, Deputy Inspector-General William Digby Longfield, R.N. (retired), in his 90th year.
SMITH.—On May 26th, at Yew Tree Cottage, Alcester, Warwickshire, Thomas Haywood Smith, L.R.C.P., M.R.C.S., aged 85.
WALLER.—On May 16th, at "The Drachenfels," Nuneaton, Dr. Harry Mortlock Waller, in his 57th year.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

VORONOFF'S METHOD OF REJUVENATION.

THOUGH Dr. Serge Voronoff's method of testicular grafting has long been familiar to medical men in this country through the medium of his books (see THE LANCET, 1927, i., 446), the lecture delivered before the Cambridge Medical Society on May 23rd was the first which he has given in England. An audience of nearly 500 people gathered in the large anatomical theatre of the University to hear the address.

Dr. Voronoff, who spoke in French, began by describing how the increased virility associated with supernumerary testes and the decreased mental and bodily powers of eunuchs had directed his attention to the rôle of the sexual glands in maintaining mental and physical vigour. Attempts to transfer active testes to the scrotum of debilitated animals had failed at first, partly because the blood-vessels forming round them did not penetrate more than about 1 cm. into the transplanted tissue; if layers of graft thicker than this were used the whole behaved as a foreign body and was cast off by the organism. It was possible, however, to make grafts which retained their functional activity, and histological sections of successful grafts made at periods up to four years after transplantation showed that the gland tissue was still normal. His success with testicular transplantation in rams was illustrated by numerous photographs. One of them showed a ram 12 years old—a great age for this species—which was rejuvenated by grafting and had robust offspring. Four years later signs of senility again appeared and a second graft was done with striking results. This ram, said Dr. Voronoff, was still alive and was over 20 years of age, which would correspond to 160 in man. Transplantation of testes in domestic animals had also been done extensively with a view to increasing meat and wool production, and the results were impressive. It had been found that not only was the number of offspring of rams so treated increased by 20 per cent., but the weight of their wool and that of their offspring was greatly increased, the hair being longer, strong, and finer than that of normal animals.

Rejuvenation experiments in man had been first attempted with glands from dogs and rams but the grafts had not taken, and it was only when the testes of chimpanzees were tried that success was attained. Dr. Voronoff showed three photographs of patients before and after treatment, all of which seemed to show a profound change, though it was difficult to say how far this was a true "rejuvenation." One patient was a man who had been in a mental home for senile dementia, and whose mind was so feeble that he could not answer the simplest questions; six months after operation he was able to resume work as a pharmacist. A second was a French architect of 73 who was no longer able to work because he was physically and mentally deficient; three years after the testis of a monkey had been grafted he was able to resume work and said he felt 15 years younger. Dr. Voronoff made the interesting observation that in cases of arteriosclerosis and high blood pressure grafting had the effect of lowering the blood pressure to normal. In women ovarian grafting was found to have much less effect than testicular transplantation in men, but the effect was increased if portions of thyroid and pituitary gland were inserted at the same time, as was his present practice. He explained that it was difficult to get photographs of patients who had been rejuvenated as they were all very reluctant to sit. The lecture concluded with a film demonstrating the technique used in transplanting the testis of the monkey into man.

An account of a discussion of Voronoff's methods in Vienna will be found on p. 1142 of our present issue.

GLASS AS A POISON.

AT a meeting of the Medico-Legal Society on May 24th, Dr. Roche Lynch exhibited samples of powdered glass that had been used in attempts at homicide. One sample, administered in a chupatti, was made of the coloured glass bangles worn by native women; another had been mixed with sugar and given to a non-commissioned officer. It was interesting, in view of the sinister reputation of this substance, to hear that in the opinion of most authorities powdered glass is comparatively harmless. In 1825 a Dr. Jones narrated in THE LANCET how he used to administer it in two-scruple doses as a vermifuge, followed by calomel. Major D. R. Thomas, of the Indian Medical Service, said that out of 2000 poison cases he had observed in four years only one death had been caused by glass, and he did not think that finely powdered glass did any harm. He has seen, in the bazaar at Amritsar, kite-fliers dress their strings with glass powder for a game in which the object is to cut the opponent's line. Children ate sweets with their hands all over the powder, but looked quite healthy in spite of it. This supports the opinions of the compilers of the Ministry of Health's report on glass fragments in food.[1] Large fragments are, of course, another matter; one of Dr. Roche Lynch's samples was taken from the alimentary canal of a suicide, who had died in two hours. The stomach was badly scratched, and the intestine was lined with spicules, but there was no perforation. A diagnosis of cholera was made before closer examination detected the glass. The report emphasised, however, that glass fragments large enough to do damage were extremely rare in food, and Dr. Roche Lynch corroborated the finding that the better the maker the fewer the glass particles. Glass may find its way into bottles and jars during the welding together of the two moulded halves or during the filling of the jar with hot food, and whereas good manufacturers promptly reject faulty containers the less scrupulous ones send them out packed. One of Dr. Roche Lynch's samples consisted of powdered glass combined with arsenic to ensure its efficiency as a poison; in a country like India where arsenic can be bought in any quantity in the bazaar the chemical irritant is naturally more popular than the mechanical. Even in this country, with all its legal restrictions, powdered glass is rarely employed and arsenic very often. At the same meeting Sir William Willcox gave an absorbing account of the Armstrong case, passing round the actual chocolates with which the criminal attempted to poison his professional rival.

HEALTH PROPAGANDA BY PAMPHLETS.

THE Wesleyan and General Assurance Society of Birmingham continues to issue its valuable leaflets on health. The collection we have just received contains several new ones, whilst others show signs of revision. The society is not content with dealing with definite diseases and their prevention but offers general advice on such subjects as diet. Quoting the saying that "diet cures more than the lancet," they have prepared two more leaflets on the Why's and How's of Diet, entitled Points on Buying and Hints for the Cook. Whilst the intelligent housewife will welcome and profit by the information contained, it is less certain that it is worded tactfully enough for the average ruler of the kitchen. The infectious fevers are now mostly covered by separate leaflets, but it would be interesting to see what this enterprising bureau would make of one on small-pox and vaccination. The leaflets are on sale for distribution.

THE HARVEY BANQUET AT THE GUILDHALL.

WE have received a photograph of the centre section of the company present at the Harvey tercentenary banquet given by the Royal College of Physicians of London in the Guildhall on May 16th. The photograph was taken by Photographia, Ltd., who wish to state that, as it was impossible for the majority of those present to see the photographs before the company separated, copies may be obtained from their establishment at 17, Cheapside, London, E.C. The company was photographed in three sections: (1) a centre section, (2) the section on the Chairman's left, and (3) that on his right. The section submitted to us contains many good portraits, and some of our readers may wish to possess an illustrated memorandum of an interesting occasion.

GLYCOSURIA AND LIFE ASSURANCE.

To the Editor of THE LANCET.

SIR,—I was much interested in reading your leading article in THE LANCET of May 26th on the subject of glycosuria and heredity, in particular the concluding paragraph. In the year 1885, when in India, I took out a policy for £100 on my life in the Commercial Union Assurance Company when I was classed as A1. In 1887 I took out another policy in the same company for £500 and was again passed as A1. My examination took place on a Wednesday. On Saturday the same week I went before the medical referee for another company as I had proposed for another policy for £1000. This medical officer refused my life, stating I had diabetes and my life was not worth accepting. I was so astonished, seeing that only three days before I had been passed as A1, that I called on my own medical man, who examined me very closely and said he could find nothing wrong. I interviewed the company with a view to getting them to accept my proposal but was told nothing could be done in the face of their medical man's report. You will note the date 1887. I am still alive, am 72 years old, very active, in perfect health, and not a trace of sugar has ever been found in my system.

Not only has this mistaken report of my case resulted in loss of revenue to the company concerned, but it has done me the injustice of preventing me from getting any free insurance. I had intended taking out policies up to £500, or perhaps more, for the benefit of my wife and children.

I am, Sir, yours faithfully,

May 26th, 1928. G. H.

[1] See THE LANCET, 1927, i., 881.

Croonian Lectures

ON THE

INTERPRETATION OF GASTRIC SYMPTOMS.

Delivered before the Royal College of Physicians of London

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LECTURE I.

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DISORDERS of the gastric functions are amongst the most ancient maladies recorded in medical literature, and yet no general agreement has hitherto been reached as to their classification. Galen [1] was apparently the first observer to arrange them in groups upwards of 2000 years ago. He was dissatisfied with the different meanings which the ancients, as he calls them, gave to the old Greek word "apepsia," which was then in general use. He explains that the digestive function may be conducted weakly although in a normal manner, or it may be definitely disordered, as when the food is changed into some strange matter not useful to the body. He says that the absence of digestion should be called "apepsia," a weak or delayed digestion "bradypepsia," and a disordered digestion "dyspepsia." Such was the probable origin of this vague but expressive term which is in common use to-day. Galen's classification evidently survived into the seventeenth century, for it is adopted by several writers of that period.[2] Subsequently apepsia and bradypepsia dropped out of use, and dyspepsia, instead of being employed as the name of a particular pathological disorder, came to be used as a symptom-complex representing all the maladies to which the stomach is liable. Cullen,[3] for example, in 1784 described idiopathic dyspepsia as being due to local and general causes (food, ill-health, and so on) and symptomatic dyspepsia as due to organic disease of the stomach or of some other part of the body. The same view is expressed in the Dictionary of Medicine by Andral and others [4] in 1837, and it is expressly stated that in all cases the cause is to be sought for. Brinton, in 1864,[5] on the other hand, excludes organic disease from the definition of dyspepsia and regarded it as implying a derangement of function only; and this is the sense in which the term has been most commonly used up to the present time. Dyspepsia has been classified in many ways within recent years; according to the most prominent symptom, the time of onset of the pain, or the character of the eructated material; as to the kind of food or other supposed cause giving rise to the disturbance; as to whether the functions were exaggerated or depressed; and in many other ways. None of these came into general use, although several of the more descriptive terms still survive—for example, "flatulent dyspepsia."

A change took place in the conception of dyspepsia when the modern methods of functional diagnosis began to evolve some 50 years ago. The investigations of the motor and secretory efficiency of the stomach led to the classification of gastric disorders into motor, secretory, and sensory neuroses, each condition being given the status of a separate entity. This proceeding was not justified, because, generally speaking, the neuroses had no clearly distinguishable clinical types of symptoms to correspond with them, and therefore their use never became general, although here again some of the terms survive—for example, "hyperchlorhydria." Neither have our most modern methods of investigation by the X rays and the fractional test-meal supplied us with an explanation of the symptoms of dyspepsia. They have added considerably to our knowledge of the physiology and pathology of the stomach, and are indispensable in the diagnosis of organic disease, and in pointing out the gross changes in function resulting from it. They have, however, shown us that the normal variations in anatomy and physiology are so great that it is usually impossible to say by their use whether any abnormality is present or not in cases of simple functional disturbance. Our methods are imperfect, for the meals administered in the investigations are not such as the patient usually eats, neither is his nervous system at the time of examination in the same condition of irritability as when he is following his vocation. Very often the same appearances may be seen by the X rays whether the patient is in pain or not, for the fine changes in muscular tension responsible for the pain cannot be appreciated by our methods, more especially as hypersensitiveness of the sensory mechanism is an important factor to be reckoned with. A reaction initiated by our surgical colleagues has now taken place. The performance of abdominal operations, quite apart from its aim as a method of treatment, has aided research in many directions, not to speak of independent observations made by individuals. Speaking of gastric symptoms only, it has focused attention definitely upon organic disease and shown that several symptom-complexes formerly described as neuroses are due to this cause. On the other hand, it has demonstrated that these same groups of symptoms may be present in the absence of organic disease, as the operations, at which no demonstrable disease is found or at which the removal of the supposed organic cause has brought no relief to the symptoms, demonstrates. It is thus quite impossible in many cases to distinguish the symptoms due to an organic disease from those exhibited by patients free from such disease, since the same disturbance of function is caused in each case. The conception of dyspepsia has thus returned to that of 200 years ago, and it is now regarded by an increasing number of the members of our profession as signifying a group of symptoms resulting from functional disturbance of the stomach, as a primary affection, or due to organic disease. I believe that this view is the correct one to adopt, and that the leading idea to be kept in mind in investigating a case of dyspepsia should be the exclusion of organic disease. Our first object in diagnosis should be to ascertain the part of the gastric mechanism which is upset and the disturbance in action which it shows; and, secondly, the cause of this disturbance. The first can only be achieved by a thorough examination of the symptoms of the patient, as these afford the most delicate and the earliest available index of disturbed action. In order to do this a clinical classification of dyspepsia is necessary in which the divisions are made into symptom-groups or syndromes, each of which is the clinical expression of the disorder of function of a particular part of the stomach. The second point as to whether the cause of the disturbance is organic disease or not may be settled offhand in many cases; but in view of the fact that organic disease may be latent as regards characteristic symptoms an X ray examination is always necessary, if for any reason it is desirable to exclude such a disease as far as possible. Dyspepsia is one of the most prevalent of disorders, and most cases are examples of simple disturbances of function, so that it is neither desirable nor possible to subject every patient to further examination than that afforded by clinical means, unless there is some good reason for so doing. The danger of missing a serious organic disease of the stomach lies, firstly, in the neglect of a thorough clinical examination; and, secondly, in allowing unrelieved cases to drift as if of no importance instead of resorting to further investigation. Each disorder of function requires a different treatment so that the determination of our first object in diagnosis is necessary before we can cure our patients. The question now arises as to whether it is possible to classify dyspepsia clinically into symptoms which represent the separate disorders of function of the stomach. The miscellaneous and varied symptoms of which the subjects of dyspepsia complain, further

complicated by their different modes of expression and exaggeration, seem to defy classification, and yet the careful observer must perceive that, out of the mass of cases he sees, there are several different combinations of symptoms constantly recurring, which appear to indicate that order and regularity really prevail, but that the outstanding features of a given symptom group are so very often overshadowed by unimportant details that the reverse appears to be the case. One group has already been named the pyloric syndrome, but it lacks definition. I believe that it is possible to classify dyspepsia clinically into such symptom groups and by explaining these in terms of physiology to build up a rational pathological physiology of the stomach.

The stomach has the functions of receiving the swallowed food moderately quickly and of delivering it gradually to the intestine, so that there are two distinct phases during the digestive process at which its functions may be interfered with—namely, during the filling and during the emptying. We know quite well which parts of the stomach are concerned with these two acts and the chain of events occurring during each, so that it should be an easy task to explain the clinical manifestations of the disorders which occur during each phase. This is what I mean by the interpretation of gastric symptoms. The functions of the stomach are so coördinated that it works as a whole and yet a consideration of the symptoms of gastric disturbance suggest that the disorder commonly begins in one part and that this part may remain for long periods the chief centre of irritation, or that the other parts may soon be equally involved so that in all cases we must endeavour to find out if possible where the disorder has begun, as this determines the type of the malady. This entails a careful history of each symptom, not only as to the order of its appearance in the symptom-complex but also as to any changes in its character which has appeared since the illness commenced. It is necessary to have a large number of cases available in order to obtain a sufficiency showing simple combinations of symptoms, from which to form types in the first instance, and finally to explain the more complicated forms. With this end in view I propose to give you the results of a study of a series of 1000 cases of gastric disturbance. My object being to demonstrate the various ways in which the functions of the stomach are interfered with, this series should be free from cases of organic disease. But it is quite impossible to obtain such a series, because we have seen that certain organic diseases produce the same symptoms as those we wish to study, since they upset the functions of the stomach in the same way. Now a disease does this by acting as a focus of irritation to the particular part of the stomach in which it is situated and, so long as it does not structurally alter the stomach may be included in our series with advantage, because it tells us exactly what symptoms to expect when a given part of the stomach is irritated. The truth of the matter is that there are two distinct groups of dyspepsia, defined as we have agreed upon—the symptoms of interference with the functions of the stomach which is (1) structurally normal, or (2) structurally abnormal. There is a fundamental difference between the two, because it is impossible to study the disturbances of normal function in an organ so structurally altered as to be incapable of performing these functions. I refer to pyloric stenosis, hour-glass stomach, leather-bottle stomach, and the various deformities produced by carcinoma, and so on; on the other hand, an uncomplicated gastric ulcer produces its symptoms by acting as a focus of irritation and so interfering with the normal functioning of the part in which it is situated. The type of dyspepsia in which the stomach is anatomically altered can in the majority of cases be excluded. The series of cases I shall deal with, therefore, includes all those patients with gastric disturbance, as they come before the physician, in whom the stomach is capable of performing, and periodically does perform, its functions normally. Before proceeding to an analysis of these cases I shall first give a brief account of my views upon the mechanism of production of pain, because it is necessary to keep this in mind during the consideration of the symptoms; and also upon the value of local and referred pain as indicating the part of the apparatus affected.

Mechanism of Production of Pain.

Modern research in gastric pathology has shown that the symptoms constituting dyspepsia are not due to alterations in the secretion of gastric juice or in the chemical process of digestion, but to alterations in the motor functions of the stomach. So long as these functions are conducted normally and the stomach empties in the normal time it does not matter whether the gastric juice is increased or diminished in amount; but if the stomach fails to empty itself normally then secondary alterations occur in the gastric contents, which add to or modify the symptoms produced by the motor insufficiency of the stomach.

For a great number of years before it was clearly established [6] that the alimentary canal is insensitive to the ordinary stimuli which produce touch and pain in the skin it was considered that muscular spasm was the cause of some forms of abdominal pain; and now it is almost universally considered that visceral symptoms in general are almost entirely muscular in origin, and only on occasion originate in the mucous membrane.

The *muscular sensations* may be grouped under two headings: (1) *Minor sensations*, expressed as some form of discomfort or as the feeling of a lump, weight, tightness, or fullness. (2) *Pain*, varying in degree from a slight ache to very severe pain and described by the patients in different terms, each expressing the kind and degree of pain they experience. There is no real difference between these sensations, each expressing in a special way some degree of muscular tension. Each minor sensation may develop into pain, sometimes the two alternate at different times, and often the patient cannot say whether the sensation is actually one of pain or not. They are also similar in respect of the time of their appearance and disappearance and of their position. The explanation of the fact that the viscera give rise to pain in morbid conditions and yet are insensitive to ordinary stimuli was first supplied by Sherrington.[7] He explains that the ordinary stimuli are not such as produce visceral pain in these conditions and that the stimulus to do so must be of a certain kind—that is to say, it must be an adequate stimulus, a stimulus for which the part of the reflex arc concerned has a selective excitability. The adequate stimulus which causes pain is a distensile stimulus, and if the viscus is distended with fluid pain results.

The first systematic observations upon this subject were made by Hurst and his colleagues.[8] They distended various parts of the alimentary canal slowly by the balloon method, and found that at a certain pressure varying in the different regions a sensation of fullness and distension was felt by the patient; if, however, the balloon was rapidly inflated pain resulted which was slowly replaced by a sensation of fullness, without any accompanying fall in pressure. They concluded that there was no essential difference between the mode of production of each, and that the cause was tension exerted on the muscular coat, owing to the rise of internal pressure, actual pain being caused by the rapidity of inflation. I believe that this explanation is correct, and that excessive muscular tension is the cause of the pain. The excessive tension may be due to internal stretching or to muscular contraction. In whichever of these two ways the tension is brought about the effects of increased muscular tension are the same, but in its production two different reactions are involved. In each reaction the muscular tension is the resultant of one force due to stretching and another due to muscular contraction; but in the one case the primary cause is the stretching and the tonus reaction a secondary effect; and in the other case the primary cause is the excessive muscular contraction and the stretching the

secondary effect of the opposition to contraction by the pressure exerted upon the gastric contents. It is a well-established fact in physiology that stretching acts as a stimulus to smooth muscle, and if the stretching is gradual the muscle elongates up to a certain point, when contractions commence; if rapid, tonic and rhythmic contractions begin at once, but finally disappear if the stretching process is kept up, as in the distension experiments mentioned just now. The excessive tension is never the result of simple passive stretching of the muscle, and in both reactions, whether primarily due to stretching or to muscular contraction, the muscular contraction is really the essential factor and the tension produced in the fibre is an abnormality of the contraction tension. The commonest cause of excessive contraction tension in dyspepsia is increased contraction of the muscle itself and not stretching, because pain due to stretching soon passes off as the muscle accommodates itself. The stomach may be stretched to enormous limits without pain, as in the so-called acute dilatation, which is really an acute distension with fluid. In atonic conditions of the stomach there is no pain because the muscle-fibre is unable to recover its normal tone.

Payne and Poulton [9] have advanced a theory of visceral pain which is opposed to that which attributes it to tension in the muscle-fibre. They found that in cases of more or less prolonged pain there was an increase of the mean pressure within the organ; that when the pain was momentary it was associated with a single muscular contraction and occurred as the muscle relaxed; and that a peristaltic contraction relieved the pain of the distended œsophagus. They concluded that when the wall of an organ is stretched all the structures forming it, muscle-fibres and nerve-endings, take up the tension and that the pain is due to stretching of the nerve-endings that subserve the sense of pain. If the muscle contracts it overcomes the stretch and takes the strain off the nerve-endings, although the tension in the muscle-fibre is further increased by this act. I find it difficult to see eye to eye with Poulton and to interpret the symptoms of dyspepsia by this theory, and for the present at all events must retain the hypothesis that pain is due to an increase in the contraction tension of the muscle-fibre, which assumption, as we shall see, is rendered all the more probable, since it enables us to interpret the symptoms of dyspepsia. Great variations in the contraction tension of the muscle-fibres do not normally occur in the alimentary canal, and Sherrington [10] has explained why this is the case. He shows that a muscle may lengthen or shorten without appreciably lessening or increasing its contraction tension; this form of activity he speaks of as postural. It is essential that the stomach should be easily able to accommodate food received often quickly and in large amount without much alteration in its internal pressure, otherwise there would be an obstacle to the entrance of food. The body of the stomach is able to accommodate itself as it is filled by a lengthening reaction and similarly as it empties and the contents diminish in volume by a shortening reaction. It assumes different postures to suit the volume of its contents without increasing the contraction tension of its muscle-fibres. Similarly, a sphincter which is closing an orifice is in the condition of postural contraction and shows no excess of tension on the muscle-fibres. The excised stomach is able to carry out these reactions although less perfectly than when it is controlled by the finely adjusted balance between its motor and inhibitory nerves. Any interference with this postural adaptation of the musculature results in an increase in the contraction tension of the fibres and discomfort or pain follows. The most important cause of such an interference is irritability of the neuro-muscular mechanism in which state the muscle-fibre reacts too readily and too strongly to stimulation and may become spasmodically contracted. Repeated abnormal stimuli give rise to a permanent irritability and exhaustion is liable to follow, leading to a condition of irritable weakness in which the muscle reacts too readily, but incompletely. This irritability affects both the lengthening and the shortening reactions of the muscle-fibres—that is to say, produces its effects during the filling and the emptying of the stomach. In the former case the muscle refuses to relax in the normal fashion and in the latter contracts too energetically, so that in both cases the internal pressure rises as a secondary effect. When the increased contraction occurs late in the digestive process as the result of excessive stimulation by the gastric contents, filling the stomach puts an end to the symptoms by inducing a normal lengthening reaction. If the muscle is initially irritable a normal lengthening reaction cannot be so well induced by eating and pain occurs as soon as food is taken. Apart from irritability of the muscle there are two other conditions which interfere with the lengthening reaction and produced symptoms as soon as food is eaten. The first is too rapid filling of the stomach, as in bolting the food, whereby time is not allowed for the lengthening reaction to occur. The second is diminished tone in the muscle, which is really a condition of irritable weakness. When the stomach is too rapidly filled the internal pressure acts as a stimulus to contraction, but in all other conditions this internal pressure is entirely dependent upon the energy of contraction. In each case the internal pressure opposes the contraction and thus increases the contraction tension. Since pain appears so much more easily in some individuals than others, or at certain times more than others in the same individual, the stimulus in each case being of the same degree, it is clear that some other factor must be involved, and this factor is the degree of sensitiveness of the nervous system, for pain appears more readily in proportion to this sensitiveness.

In the patient with neuropathic tendencies not only are the reflex motor disturbances responsible for the symptoms more easily excited even by a normal or subnormal stimulus, but their sensory manifestations are exaggerated. Now a surprisingly large number of people have such tendencies without really deserving the name of neuropath, and perhaps most patients as the case progresses show an increasing irritability of the nervous system in a manner which will be discussed later, so that there is no sharp dividing line between the person of average normal stability of nervous system and the neuropathic patient. In both the sensations which are experienced become exaggerated in different degrees and more clearly defined in consciousness as the result of their prolonged continuance and the attention paid to them. The parts in which this factor plays the most prominent rôle are the œsophagus and body of the stomach, because they are more closely connected with consciousness than the pyloric end. Certain normal sensations are received from them which on exaggeration become symptoms of dyspepsia. The act of swallowing can often be felt if the attention be concentrated upon it, particularly if the bolus be larger than usual. The œsophagus can appreciate heat and cold, and a burning sensation on swallowing concentrated alcohol. Hunger sensations, sometimes amounting to pain, and the pleasurable act of filling the stomach concern the body, which also experiences a sense of fullness or distension when a larger meal than usual has been eaten, particularly if swallowed quickly. Voluntary control can be exercised over the cardiac end and gas eructated to relieve the pressure within it. On the other hand, the pyloric end gives no sign whatever to the normal individual that it exists at all. It is only to be expected, therefore, that such sensations should be more easily excited and develop into pain with more moderate degrees of muscular contraction than are responsible for pain at the pyloric end of the stomach.

Local and Referred Pain.

We must now turn to a consideration of the question as to how far it is possible to determine with any degree of certainty by the study of pain whether the œsophagus, the cardiac, or the pyloric region of the stomach is the part of the apparatus disordered. This would be quite a simple procedure if all visceral

pain were local—that is to say, situated directly in the affected part—because it would then be strictly confined to the area of the part. This is, however, not the case, because whenever the contraction tension of the muscle oversteps a certain variable limit referred pain appears, which differs from local pain in that it is often felt at a distance from its source and not only in front but also behind. The relative importance of these two kinds of pain has given rise to considerable discussion more particularly during the last 40 years, and disagreement still exists; so that I must now clearly define my attitude towards this subject.

Local Pain.—The first observer to describe definitely two kinds of pain was Ross[11] in 1888, splanchnic, which was felt in the organ itself, and somatic, which was referred to the wall of the body. Head,[12] in 1905, expresses the view that the viscera possess a low form of sensibility called by him protopathic, whereby they can feel pain and extremes of heat and cold, but these sensations cannot be accurately localised. Mackenzie,[13] on the other hand, denied the existence of local pain. Now there can be no doubt that the minor sensations felt in dyspepsia, the feeling of a lump or weight, or of distension and fullness, or of hunger sensations, are all local. They are all more or less special sensations and are merely an exaggeration of the normal feelings, which everyone now and then experiences. They are never felt in any other position than over the region of the organ producing them, they are never felt in the back, they do not radiate, neither are they ever accompanied by reflex phenomena. It is only reasonable to suppose, therefore, that when these sensations become painful the pain may also be local. The œsophagus localises its sensations fairly accurately, and they are felt in the mid-line of the sternum from the root of the neck to the epigastric angle; this lower point may correspond more or less with the apex of the ensiform cartilage or may be below it if the cartilage is very short. The boundary line between local œsophageal and gastric sensations is naturally indefinite. Local gastric sensations, whether of fullness or hunger, are felt diffusely over the upper abdomen between the ensiform and the umbilicus and more to the left than the right. Both these sensations, fullness and hunger, are particularly concerned with the body of the stomach, so that the above area is that in which body sensations are felt and they are always diffuse and badly localised. When actual pain occurs limited to the central line of the chest, or diffuse and indefinite pain limited to the gastric area, such pain may be local. Although we do not seem to be normally conscious of the pyloric end of the stomach or of the pyloric sphincter, it no doubt causes pain badly localised and indistinguishable from that due to the body.

Referred pain is of much greater importance than local pain, because it is the chief gastric pain, its position is localised and constant, and it should therefore be definitely indicative of the part of the stomach affected. References to it are to be found in the earliest medical literature, and such pains occurring in parts of the body remote from the organ causing them were known as "sympathetic pains." In later times direct anatomical connexions between certain spinal and sympathetic nerves were demonstrated, and it was supposed that in some way or other nerve impulses passed from the one to the other; thus pain occurred in the distribution of the spinal nerves when the anastomosing sympathetic nerves were irritated. No definite explanation, however, was offered as to how the transmission of the impulse was effected. The first observer to enunciate clearly the principle that the transmission was effected in the central nervous system was Dr. S. Martyn, professor of physiology and physician to the hospital at Bristol.[14] In 1864, in discussing the origin of chest pain due to the heart, he writes: "Reflected or radiated pain is now recognised as extremely common. In cases of sensory nerves entering a great centre at the same spot, if the peripheral end of one be irritated, we feel pain in, or refer it also to the periphery of the other." He considered that the impression of some distress in the heart was received through nerves entering the grey posterior columns of the spinal cord, and that the central impression was irradiated and referred by the mind to the sensitive skin. Ross,[11] in 1888, in clearly distinguishing between local and referred pain gives a similar explanation of the latter, for he says that the irritation from the splanchnic nerves is conducted by the posterior roots to the grey matter of the posterior horns, diffuses to the roots of the corresponding somatic nerves, and causes an associated pain in the territory of distribution of these nerves. The particular regions in which œsophageal and gastric pain are felt were first described by Mackenzie[13] in 1892. He also drew attention to associated tender points in the abdominal wall, cutaneous hyperæsthesia, and increased reflex irritability of the recti. Head,[15] in 1893, systematically mapped out the areas of cutaneous tenderness, in which referred pain also occurred, corresponding to each segment of the spinal cord.

These observers considered that a focus of irritation is set up in the spinal cord and that sensory impulses from other parts passing into this segment are so exaggerated as to be painful. According to Head referred œsophageal pain occurs in the fifth and sixth dorsal areas—that is to say, over the lower part of the sternum and occasionally in the seventh area; referred gastric pain occurs in the seventh, eighth, and ninth areas, each occupying about a third of the distance from the ensiform to the umbilicus from above down, and occasionally in the sixth or tenth area. Behind the space covered by these areas extends from the ninth to the twelfth dorsal spines. He advanced the hypothesis that the seventh area corresponds to the cardiac end and the ninth area to the pyloric end of the stomach, but says he has no proof to offer of this supposition. Mackenzie agrees with Head as to the distribution of œsophageal pain, but differs as regards gastric pain, for he limits it to the epigastrium and excludes the supraumbilical region. Neither of these observers supported his contention with a definite series of cases, and no useful clinical scheme to assist in diagnosis has since been evolved. Although it is impossible to say whether œsophageal pain is local or referred unless it extends across beyond the centre of the chest and occurs in the back, in the case of the stomach the very common localised points of pain in the mid-line and along the costal margins are undoubtedly of the referred type because each corresponds to an area of pain at the back; each often spreads out as a band across the abdomen not so much of pain as of tightness, the patient stating that the feeling is as if he were encased in plaster or a tight band or gripped by a vice; each usually shows the point of deep tenderness pointed out by Mackenzie, which assists the patient in localising the maximum point of pain; and at some time or other rigidity of the upper recti will be commonly but not necessarily found. It is quite impossible for gastric pain to be so well localised and to occur over such a small area in a position not directly over the stomach unless it is of the referred type. All these referred pains occurring in the back result from afferent impulses passing up sympathetic fibres from the muscular coat of the organs. The afferent impulses from the *mucous membrane* of both stomach and œsophagus pass up the vagus, so that the local sensations of coldness and burning are accompanied by referred pain in the distribution of the fifth nerve, upper and lower jaw forehead and nose, and so on, in accordance with the relation of the tenth to the fifth nerve as pointed out by Gaskell.[16] These local sensations of the mucous membrane are almost entirely confined to the œsophagus. The temperature sensations of the mucous membrane of the œsophagus are of very little importance in clinical medicine, but the burning and stinging sensation, popularly known as heartburn, is common enough. It is felt beneath the lower sternum and may be reproduced in the normal individual by swallowing concentrated alcohol, but as Hurst[8] has shown hydrochloric acid of the highest strength found in the human stomach is unable to produce this sensation in the normal person. Heartburn cannot be due to the

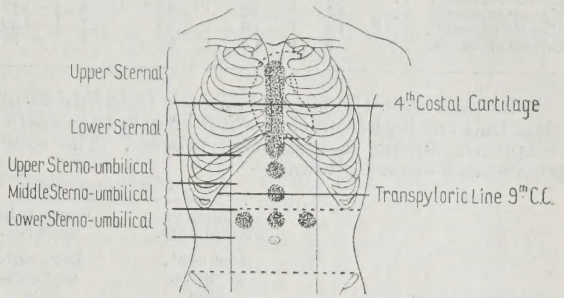
formation of alcohol or other fermentation products in the stomach, because such a condition is practically unknown in functional disorder. It is chiefly seen in cases of so-called hyperchlorhydria, but it is a common experience that, although regurgitation of the highly acid gastric contents is common in this condition, the fauces are usually irritated and not the œsophagus. It must be remembered, however, that regurgitated gastric contents may be retained in the lower œsophagus for some time, which is quite a different matter from a momentary contact with the mucous membrane. Furthermore, in neurotic patients a sensation of soreness or burning may occasionally be felt in the whole œsophagus on swallowing food. This is due to hypersensitiveness of the mucous membrane without a doubt and of the same nature as heartburn. It is therefore probable that when the nerves of the œsophageal mucous membrane become hypersensitive HCl is able to produce heartburn. Sometimes heartburn is associated with severe pain, due to muscular spasm. The chief sensation from the mucous membrane of the stomach is a slight tingling or burning when alcohol is taken, and it is likely that the burning and soreness complained of by neurotic subjects in the epigastrium is due to hypersensitiveness of this structure.

In stating the relative importance of local and referred pain in the diagnosis of the part of the apparatus affected, one may say that in the case of the œsophagus they are of equal usefulness, because each can be localised equally well and they can only be distinguished by the occurrence of pain towards the sides and back. It is a different matter with regard to the stomach, for, although both types of pain occur in the same region, local pain is too indefinite to be of much value as an index of the part affected; on the other hand referred pain, being localised usually to small areas and constant in position, is clearly indicative of the part of the stomach affected. The cases which I shall now describe are not selected, but are taken from my case-books over a series of years in the order in which they occurred in my practice, and form a random series such as appears before every physician, except that the examples of structural deformity which would occur in such a series have been excluded.

Analysis of Cases: Pain.

The most important symptom to be considered is pain in all its varieties. The first point to be determined is whether the position of the pain is a definite indication of the part of the apparatus causing it. The pain areas mapped out by Head are areas of cutaneous hyperæsthesia, which can be marked out fairly accurately. The subjective sensation of pain cannot, however, be outlined in a similar way, unless it is localised to quite a small area. Now I have found the areas of cutaneous hyperæsthesia to be of very small value in diagnosis as a general rule, because they are so uncertain and irregular in occurrence, although now and then one or more complete areas may be marked out. The idea of describing segmental areas of pain had, therefore, to be abandoned as impracticable. The main division into œsophageal and gastric areas presents no difficulty, for the former is the sternal region extending from the root of the neck to and including the apex of the epigastrium; and the latter includes the region below this to the umbilicus. The sternal region appears to be divisible into two parts, an upper and a lower, separated at about the level of the fourth costal cartilage. Referred pain is very frequent in the lower area, but much less common in the upper, although it occurs at times in this position; it does not seem to appear above the second costal cartilage (Fig. 1). The region between the sternum and the umbilicus presents the difficulty that it has no name. From the point of view of referred pain the usual areas into which the abdomen is divided are of little use, however serviceable they may be in other respects. The body wall is segmented into areas corresponding to the segments of the spinal cord and irrespective of the positions of the underlying organs. The part which concerns us—namely, that above the level of the umbilicus—differs markedly from the part below in regard to segmentation. Not only is referred pain more frequent and more clearly defined in this position, but its anatomical segmentation as shown by nerves and tendinous intersections is more clearly marked out. This part above the umbilicus is differentiated before the eighth week of fœtal life; but the lower part is only completed at the end of the twelfth week after the return of the intestine from the extra-embryonic cœlom to the abdominal cavity, to which its late development is probably due (Harris).[17] The anterior body wall is thus naturally divided at the

Fig. 1.



Central positions of referred pain in each of the anterior regions

umbilical level into supra- and infra-umbilical parts. I propose, for purposes of description, to call the upper part the sterno-umbilical region. At first sight it seems impossible to distinguish different areas of pain in such a small region, but it can be done with sufficient accuracy for our purpose by dealing with a large number of cases to eliminate errors, particularly as the areas of referred pain are very commonly no larger than the size of a half-crown piece. It must further be remembered that this region presents the greatest difficulties in diagnosis of any other region of the body, since the pain felt here may be due to almost any organ of the chest or abdomen, in addition to a great variety of other causes. From the point of view of the alimentary canal the lower part of the region is more difficult in this respect than the upper, for it represents both the intestines and the biliary apparatus equally with the stomach. The transpyloric plane cuts the mid-line of this region exactly at its central point and divides it into upper and lower parts. It is usually easy to determine whether the patient points above or below this line to indicate the position of his pain, and he very commonly touches the central point of the line itself—so that the sterno-umbilical region may be thus divided into three parts, an upper, middle, and lower. The position of the pain, whether a small or large area or a band, was marked out on a diagram at the time of examination in every case. The position of the small areas was mostly on the mid-line except in the lower part, in which they were situated quite as often towards one or other side, especially the right. By adopting this method in a sufficiently large number of patients, the error, which in any case must be considerable, was reduced as much as possible.

There are 1009 cases in all, of whom 715 exhibited pain in one area and 294 in multiple areas. The distribution of pain in 624 of the 715 cases is as follows:—

Sternal region	upper	53	cases.
	lower	119	,,
Sterno-umbilical region	upper	223	,,
	middle	152	,,
	lower	77	,,

If these areas really represent the different parts of the œsophagus and stomach from above down, the pain occurring in each position should have a definite time relation to the intake of food depending upon the part affected and the mechanism put out of gear, because the symptoms appear when the apparatus is at work and cease when it is at rest. That pain occurs at different periods of digestion is a very old-established fact, and the replies which patients make to this

question may be divided into four groups. (1) At once or within a few minutes of eating. (2) Half to one hour after food. (3) One hour or more up to seven after food, in which case the patient feels it in the early hours of the morning. (4) Irregularly, that is to say, the symptoms have no clear relation to meals, or are always present to some extent.

By adopting this grouping the time relation to the taking of food in the case of each area is as follows:—

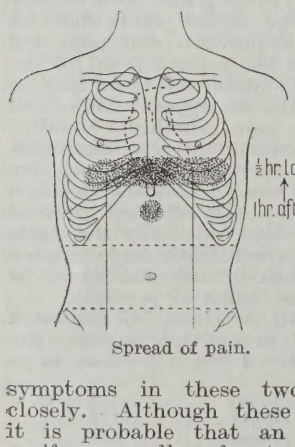
—	At once.	½–1 hr.	1 hr. up.	Irreg.	Cases.
Upper sternum ..	16	5	3	29	= 53
Lower sternum ..	25	26	32	36	=119
Upper st.-umb. ..	47	42	80	54	=223
Middle st.-umb. ..	16	16	93	27	=152
Lower st.-umb. ..	2	5	67	3	= 77

With regard to the time of onset it therefore seems clear that the higher up the pain is situated the earlier it appears during the digestive process. The exact percentages are as follows:—

	Symptoms appearing— At once or thereabouts. Per cent. of cases.	From 1 hr. upwards. Per cent. of cases.
Upper sternum	66·6	12·5
Lower sternum	30·1	38·4
Upper st.-umb.	27·8	47·3
Middle st.-umb.	12·8	74·4
Lower st.-umb.	2·7	90·1

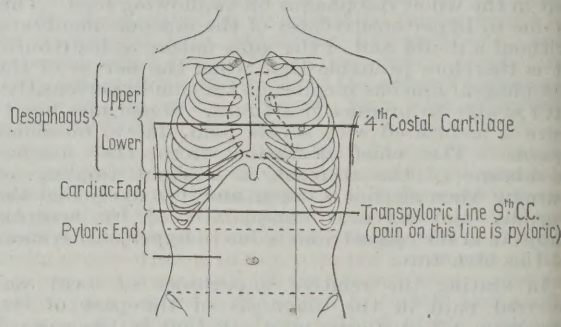
The mechanism of the stomach is likely to be upset at the time when it is subjected to the greatest stress. The part concerned with the filling of the stomach—namely, the œsophagus and body—is likely to be affected in the earliest stage; but that concerned with the emptying of the organ—namely, the body and pylorus at some later stage, when the contents have become irritating, since the more digestible parts leave the stomach first and the acidity is continually rising. So that early pain situated at the highest level should indicate disordered action of the œsophagus and late pain at the lowest level disturbance of the pylorus; whilst symptoms situated at an intermediate position and occurring both early and late should indicate a disorder of the mechanism of the body. The above figures must undoubtedly be interpreted in this way. The œsophagus and body meet at the intermediate position and the cardiac sphincter of the stomach is in fact the lowest part of the œsophagus, hence symptoms referring to the lower œsophagus should partake of the nature of both œsophageal and body symptoms. This appears to be the case, since the time of onset of symptoms in these two parts correspond very closely. Although these two parts must overlap it is probable that an isolated pain below the ensiform usually refers to the body of the stomach, for cases occur in which this pain is followed in a short time by a band of pain across the ensiform and lower sternum, or in which this pain is associated with paroxysms of pain over the ensiform (Fig. 2). Furthermore we shall see later that the relation of each of these areas to the feeling of fullness is different. It is certainly justifiable to draw the following conclusions (Fig. 3). (1) Pain occurring in the upper sternal region usually comes on either at once after food or irregularly and is associated with disordered action of the upper œsophagus. (2) In the lower sternal region it is particularly associated with disorder of the lower part of the œsophagus and appears at once after food or irregularly, but quite as often from one-half to two hours after food. (3) In the upper sterno-umbilical region it indicates disorder of the body of the stomach and appears also at once or irregularly, but rather more often from one-half to two hours after food; the two latter regions indefinitely pass into each other. (4) In the middle and lower sterno-umbilical regions pain indicates derangement of the pylorus and commonly appears more than two hours after food. The middle region shows an appreciable number of cases of pain at once or irregularly, and this region therefore to some extent represents the body of the stomach although it chiefly refers to the pylorus.

FIG. 2.



Spread of pain.

FIG. 3.



Pain region corresponding to each part of the œsophagus and stomach.

A further analysis of the one to two hours' pain shows that in the case of the body more cases show pain in this period than later and in the case of the pylorus the reverse is the case

The following analysis of 361 cases was made:—

—	½–1 hr.	1–2 hrs.	2 hrs. up.	Cases.
Lower sternum ..	9	13	8	= 66
Upper st.-umb. ..	26	33	23	=143
Middle st.-umb. ..	7	27	43	=104
Lower st.-umb. ..	2	18	23	= 48

Pyloric pain, therefore, is more likely than not to appear later than two hours after food.

The part of the apparatus and the mechanism affected is not the only factor which determines the early or late onset of pain, and we must now consider a feature of gastric pain which suggests this to be the case. This character is a tendency for the pain to shift forwards as the case proceeds on its course and to appear sooner after a meal than it did before. This is, of course, most noticeable by the patient in cases in which the pain initially appears late during digestion, but occurs in any type of case and in all positions of pain. The patient, for example, says that the pain used to start half an hour or two hours after food, but now it comes on at once after eating. Sometimes when the pain is moderate in degree it starts late after food, but when very severe it appears at once. Sixteen of the 77 cases of lower sterno-umbilical pain showed this latter feature. The tendency is therefore for any of these pains to become constant, food not affording relief as before and the patient only being free from symptoms first thing in the morning when his stomach is empty. The pain may then come on early or late after breakfast and remain constant for the rest of the day. In some cases when the pain appears early from the beginning it may disappear before the next meal, but eventually tends to become constant like the late pain. All cases do not behave in this manner and many preserve their initial time relation to food for considerable periods, more particularly pyloric cases. The suggestion is that there is some definite cause for this, sometimes operative and sometimes not. It cannot result from retention of the

stomach contents, because, if this were due to secondary atony and diminished peristalsis, any pain caused by the body of the stomach would be lessened; and, if it were due to holding up by the pylorus, this would indicate an increased irritability of the sphincter as the actual cause. It is, in fact, an increased irritability of the neuro-muscular mechanism of the stomach which is the cause. The normal muscular response of the stomach to the presence of food depends upon a nervous reflex, and with constant irritation this responds more easily, and eventually the mere presence of food, however mild, will excite the abnormal movements responsible for the symptoms. This increased reflex response to repeated stimulation is in accordance with a general physiological law and exhaustion is liable to follow eventually, some degree of atony supervening, unless the disorder is put an end to. The central nervous system also becomes irritable and affects the stomach through its extrinsic nerves. This increasing irritability of the nervous mechanism is shown in several other ways. The attacks of dyspepsia tend to become more frequent and prolonged and the symptoms more pronounced in character, although there is no obvious cause to be found except exhaustion or nerve strain. At first diminishing the stimulus by cutting off various articles of food brings relief, but later even the mildest food causes pain, and vomiting starts in bad cases; that is to say, a subnormal stimulus causes an abnormally excessive response. In addition to increased reflex irritability of the neuro-muscular mechanism, hyperæsthesia, as I have already stated, occurs. The attention tends to be more and more fixed upon the symptoms, so that they become more clearly perceptible and exaggerated in consciousness. The ideas the patient forms about his symptoms worry him, and more particularly the idea of serious disease, specially cancer. He imagines that first one foodstuff and then another disagrees with him, and his diet becomes correspondingly restricted. He gathers advice from his friends and the newspapers and tries all kinds of medicines. The symptoms are affected by emotional disturbance and overwork. All these results depend upon one thing only, and that is the degree of stability or irritability of the nervous system of the individual concerned. They occur in varying degrees in most cases of prolonged dyspepsia whatever the type, but are more likely to appear and to be specially pronounced in affections of the œsophagus and body than the pyloric region of the stomach. The œsophagus and body of the stomach, therefore, are liable to develop early and constant pain not only in virtue of their position and functions, but also in virtue of their being already better represented in the central nervous system and more subject to its influence.

A consideration of irregular pain tends to confirm this hypothesis. Here again we find that the upper epigastrium and sternum are more liable to this type of pain than the regions below. The following percentages prove this point:—

Symptoms Appearing Irregularly.

Upper sternum	.. ..	in	54·7 per cent. of cases.
Lower sternum	.. ..	,,	30·2 ,, ,,
Upper st.-umbil.	.. ..	,,	24·2 ,, ,,
Middle st.-umbil.	.. ..	,,	17·7 ,, ,,
Lower st.-umbil.	.. ..	,,	3·8 ,, ,,

The œsophagus and body of the stomach are therefore more liable to irregular pain than the pyloric region. By carefully questioning the patient one can more or less map out this irregular type into three chief groups: (1) The pain occurs either early or late after food. (2) At any time by day or night. (3) Constantly, even when the stomach is presumably empty before breakfast. The first group is fairly equally distributed between the cardiac and pyloric ends and appears, at all events, sometimes to depend on the particular meal eaten; for example, it may appear soon after a small meal and late after a heavy meal; or soon after some particular meal—for instance, tea—and late after the others; or it may come on early if he is worried or tired. The second group in which pain comes on at any time is certainly more likely to affect the body and œsophagus. It is often referred to a cause such as straining movements too soon after meals, stooping to work, sitting in a cramped position, being shaken up in a car or train, lying down at day or night, and above all emotional disturbance. Many of these are the result of increased pressure upon an irritable stomach, or the horizontal position, which induces œsophageal symptoms by regurgitation. The third group of constant pain is certainly more particularly characteristic of a high degree of nervous irritability of the stomach and more particularly affects the œsophagus and body.

It may be stated generally that pain appearing at once or within a few minutes of a meal, or occurring at any time, or constantly is characteristic of excessive nervous irritability of the stomach. There are four further points with regard to pain which are of some interest and importance. The first is the severity of pain in different positions. The two places where the most severe pain is felt are those adjacent to either sphincter, because the contraction tension of the muscle fibres is better opposed in those situations, and spasm is likely to occur. In the upper œsophagus and body of the stomach the pain is more moderate in degree and most often one of the minor sensations. Secondly, paroxysmal pain may occur in quite an irregular fashion at either sphincter, more particularly at the cardia. The patient is usually the subject of dyspepsia, but may have no other symptoms, in which case it is probably of reflex origin. Thirdly, symptoms may occur during the night and wake the patient. Any part of the stomach or œsophagus may be responsible for this, and it is due to three causes.

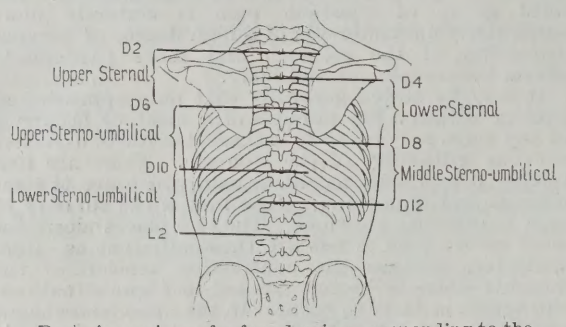
1. It is the variety of pain which comes on late during digestion and then is most often pyloric in type. It merely means that the pain is a severe pain, and it must be remembered that some individuals wake much more easily than others. However, the more severe and regular the pain the more likely it is to be due to organic disease, although pain due to simple functional disturbance not uncommonly wakes the patient.
2. The cause may be regurgitation into the œsophagus of the gastric contents owing to the position of the patient and the respiratory alterations of pressure in the stomach and œsophagus. Such a patient may wake with what he calls heartburn, or waterbrash, or a coughing attack due to regurgitation of gastric contents which irritate the larynx and which may also so irritate the fauces as to make him vomit. In each case he may complain of waking with a pain or curious feeling in the epigastrium in the first instance or not.
3. He may wake with a feeling of great distension, which leads to an attack of nervous eructation. In short, any severe symptom may wake the patient.

Finally, in patients with chronic dyspepsia periods of relative or absolute freedom from pain occur from time to time, and they are also seen when the minor sensations alone constitute the symptoms. Whether the patient is suffering from an organic lesion or simple functional disturbance makes no matter. The free intervals are due to treatment or they are due to re-establishment of the normal stability of the nervous system by rest, holidays, and the like. This applies to patients whether the disorder is painful or not, but if painful it is more noticeable, since they are more likely to take definite steps to get rid of the disorder. Perhaps it may be stated that severe pain recurring over a series of years in the male sex is most likely to be due to an organic lesion, and that patients suffering from minor sensations affecting the body and œsophagus are more likely than any other class to suffer from more or less constant symptoms without much freedom.

Pain in the Back.—The areas given are only approximate, since there is often great difficulty in localising the pain. Each pain area in front has a corresponding position for pain behind. Pain in the back does not occur in all cases of referred pain and never appears alone without pain in the front being felt at some period of the disorder. The areas are usually more extensive and indefinite than the anterior areas though not necessarily so. The pain may be situated in the centre over the spine, across both sides of the back, or more usually on the left side only. Sometimes the areas

are small and appear on the left of the spine in a line with the angle of the scapula. The two pains, front and back, may appear to be separate although occurring together, or the pain in front may seem to go right through the body or round the side to the back. The pain is described as being more or less at the same level in the back as the front, or higher up, but not usually lower down. Of 137 cases of pain in the back 81 corresponded to single areas in front and 56 to other points or combined areas. The 81 cases

FIG. 4.



Posterior regions of referred pain corresponding to the anterior regions.

are considered here—namely, those associated with the anterior areas described above. The levels varied a little in different cases, so that the highest and lowest points in each area were noted and the region included between these levels is described as that corresponding to the anterior area (Fig. 4).

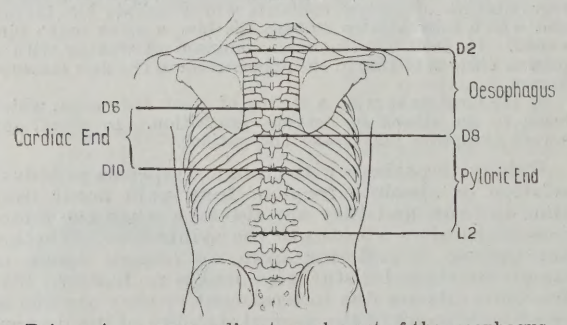
Lower Sterno-umbilical Area.—The lowest point of posterior pain was at about the level of the second lumbar spine. In 13 out of 14 cases the highest point reached to about the tenth dorsal spine and in one to the eighth.

Middle Sterno-umbilical Area.—The lowest point was about the level of the twelfth dorsal spine. In 11 cases the highest point reached to about the seventh or eighth dorsal spine.

Upper Sterno-umbilical Area.—The lowest point was about the level of the tenth dorsal spine. Nineteen out of 26 cases had pain as high as the seventh or eighth dorsal spine and 7 as high as the sixth.

Lower Sternal Area.—The lowest point was about the eighth dorsal spine. Sixteen patients complained of pain

FIG. 5.



Pain region corresponding to each part of the œsophagus and stomach.

as high as the fourth dorsal spine and five as high as the third.

Upper Sternal Area.—The lowest point was about the sixth dorsal spine. Nine patients complained of pain as high as the second dorsal spine.

Expressing these areas in terms of the different parts of the stomach the following result is obtained (Fig. 5):—

Pyloric Region.—This part may be associated with posterior pain from about the eighth dorsal to the second lumbar spine; that is to say, the pain may reach upwards laterally to about the angle of the scapula.

Cardiac Region.—The posterior pain associated with this region of the stomach may extend from about the sixth to the tenth dorsal spine; that is to say, opposite the lower third of the scapula and for some distance below.

Œsophagus.—The upper part shows posterior pain opposite about the upper two-thirds of the scapula and the lower part shows pain opposite about the lower two-thirds.

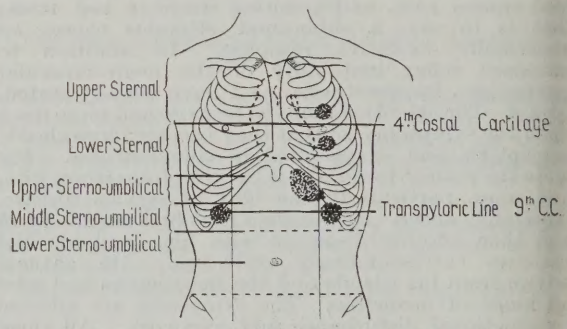
These are the limits of the pain more or less, but it is not as a rule so extensive in any individual case; the area may be quite a small one, or the patient may move the back of his hand up and down over the position in an indefinite manner, or draw his hand across the back to signify the position of the pain.

Radiation of Pain.—In most cases the pain remains localised to the positions described above, but sometimes it radiates in different directions and may be described by the patient as being "like knives."

1. The commonest type is radiation from the front to the positions described at the back. In this type the radiation is usually limited to the particular segment of the spinal cord affected.

2. In another type the radiation affects several segments and in the majority of cases passes upwards from the part affected. It may radiate from any part. It shoots up the centre of the chest or to one or both nipples, more often to the left, or up the costal margin, or up the back. Occasionally the pain shoots downwards; if it is affecting the upper sterno-umbilical area and ensiform cartilage it may shoot down the costal margins or vertically down the centre towards the umbilicus. It is rare for it to invade any segment below the ninth dorsal. In other words, it remains limited to the segments of the spinal cord connected directly with the œsophagus and stomach. Sometimes in a very neurotic patient it may be described as spreading into the limbs.

FIG. 6.



Lateral positions of referred pain in each of the anterior regions

the resistance to spread in the central nervous system being broken down.

3. *Combinations of these radiations* are also found both horizontally, and upwards, or downwards. For example from the lower sterno-umbilical area it may radiate round the sides, through to the back and also up the chest; from the upper area it may radiate up the sternum and down both costal margins; from the lower costal margin it may radiate horizontally and up the costal margin or to the left nipple; and occasionally upwards, downwards, and horizontally like the spokes of a wheel.

This radiation is of no significance except that it definitely points to the stomach as the organ affected in doubtful cases, and the position from which it radiates indicates the most irritable part of the stomach.

Continuing the description of the cases, we have now to consider the remaining 91 cases of localised points of pain; 81 of these occurred at the costal margins and 10 in the region of the nipples. They are as follows (Fig. 6).

	Costal margin.		
	Upper part.	Lower part	(9th c.c.
Right	—	35	= 35
Left	26	14	= 40
Both right and left	—	6	= 6

The most important positions are the lower part opposite the *ninth costal cartilage.* These points lie on the transpyloric plane, where it cuts the costal margins. The size of these areas varies; sometimes they are quite small or they spread out indefinitely up the costal margin and on to the ribs with this point as the centre. There is no doubt that they are particularly connected with the pyloric region of the stomach, and it is quite common for patients to indicate a line of pain passing through the middle of lower sterno-umbilical region and reaching to the side through these points. The points of pain *near the nipples* are quite localised and on the left side usually

nd the patient on being asked to point to the pain uts one or two fingers at the nipple or just above or elow this point.

The following tables show the time relations of the ain in these different positions in relation to meals.

Costal Margin.

—	At once.	½–1 hr.	1 hr. up.	Irreg.	Cases.
eft upper c.m. ..	5	6	10	5	=26
eft 9 c.c.	1	2	9	2	=14
ight 9 c.c. ..	1	1	32	1	=35
ight and left 9 c.c.	—	1	5	—	= 6
					81
ipple region ..	3	—	2	5	=10

Now it is quite clear that the right 9 c.c. area has ıe same time relation to food as the lower sterno-mbilical area: the left 9 c.c. area, and the left and ght combined, are similar though not quite so arked. These two areas, then, should be regarded ; indicating pyloric pain as already stated. On the her hand, the left upper costal margin shows the me characters as the upper sterno-umbilical area id no doubt represents the body of the stomach. his inference might have been drawn since their vels fall within the areas indicating these two regions the stomach. I may mention here in support of is conclusion that the right 9 c.c. area is a frequent osition of pain in duodenal ulcer and the combined ght and left 9 c.c. areas also, but less frequently. he right upper costal margin is usually combined ith the lower portion or occurs as a part of pain in ıe upper epigastric angle. The position of the pain the nipple region indicates that it is of œsophageal igin, and so far as this small number of cases goes supports this conclusion, since the cases showing ain quite soon after food and irregularly are four times numerous as the cases occurring in the period ıe hour and upwards.

The *posterior pain* associated with these positions is agreement with these conclusions.

Lower Costal Margin.—The position of the posterior pain aried between the eighth dorsal and the first lumbar spine, hich is that of pain associated with the pyloric region. ıe right costal margin pain is often associated with left osterior pain.

Left Upper Costal Margin.—The posterior pain occurred om the eighth to the tenth dorsal spine, a characteristic of ain due to the cardiac region.

Inframammary.—The pain corresponding to this position curred between the fifth and eighth dorsal spines, a aracteristic of the lower œsophagus.

Pain above the Nipples.—In one case the posterior pain as felt in the region of the third dorsal spine, a characteristic the upper œsophagus.

Combining the 715 cases of isolated positions of ain, 182 represent the œsophagus, 249 the body of .e stomach, and 284 the pyloric end. This gives the llowing percentages :—

Œsophagus	182	=	25·3	per cent.
Cardiac end	249	=	33·4	,,
Pyloric end	284	=	39·7	,,

It is obvious that these areas of pain in the line of .e nipple and in the costal margin have precisely the me meaning as the central points at about the same vel. It thus appears that there are three lines of calised pains: the first down the centre, the second the line of the nipples and the costal margin, and .e third more or less in the centre at the back or to e left of this in the line of the scapular angle.

Tenderness and Rigidity.—The most important of ese reflex phenomena, because the most constant, e the deep tender points described by Mackenzie and .e muscular rigidity. The cutaneous tenderness scribed by Mackenzie and Head, as I have already ated, I have found to be so uncertain and irregular its appearance and so temporary that it is of little actical use in diagnosis except on occasion. These henomena which occur with referred pain and depend on the same mechanism for their production are most obvious when the pain is at its maximum. They generally outlast the pain and are present between the individual attacks of pain, finally disappearing more or less slowly when a pain period is ended. The reason for this is that the gastric irritability causing the pain does not at once disappear when the pain is relieved, as shown by the great tendency for the pain to recur, unless the treatment is continued for some time. The most marked instances occur in ulcer of the stomach and duodenum, and in the neurotic patient. In the latter case a spread of irritation occurs to adjoining segments of the spinal cord and the whole abdomen may be tender and rigid. Such cases are examples amongst other types of what has been well described by Hutchison as the chronic abdomen. An increased reflex contraction of one or other rectus has the same meaning, and as Mackenzie pointed out when it is present the reflex may be obtained from the skin in the axilla even up to its summit. The deep tender points are usual occurrences with referred pain of any degree of severity. They are felt in the abdominal wall and less commonly in other positions, and correspond in position with the painful points described above. They are a good guide to the localisation of the actual position of the maximum pain. They are much less common at the back. They are thus of great importance in that they are an objective indication of the part of the stomach affected.

The rigidity affects the upper segments of both recti or one only. It is to some extent an indication of what part of the stomach is affected. For example, in a series of 75 cases pyloric pain was associated with a rigid right rectus in 68 per cent. of cases and with rigidity of both recti in 32 per cent., and body pain with rigidity of both recti in 64 per cent. and with a rigid right rectus in 36 per cent. of cases. Rigidity of the left rectus without any increased tension at all in the right does not appear to be common.

The *main conclusions* so far drawn from the study of this series of cases may be summarised as follows.

1. There is no difference between the minor sensations and pain as regards their significance; the one merges into the other, and they are both due to abnormal contraction tension of the muscle-fibre.

2. The position of the pain and the time of its onset after eating definitely indicate the part of the apparatus affected and the mechanism disordered (Figs. 3 and 5).

3. *Pyloric pain* occurs in the following positions: Across the abdomen in the transpyloric line as a band, or as a localised area in the centre, or at one or both ends of this line where it cuts the costal margin (9 c.c.). Across the abdomen between the transpyloric line and the umbilicus as a band or an isolated area in the centre, but quite as frequently to one or other side, particularly the right. Behind the area which may be covered extends from about the eighth dorsal to the second lumbar spine. The pain characteristically occurs late during the digestive process.

4. *Body and Lower Œsophagus.*—The pain occurs at some position between the transpyloric line and the line of the fourth costal cartilage, as a band or localised area in the centre or to one side, particularly in the nipple line or along the upper costal margin. Pain between the transpyloric line and the ensiform definitely indicates the body of the stomach and above this the lower œsophagus, but œsophageal pain may encroach on the stomach area to some extent. Behind, the painful area may occur opposite the lower two-thirds of the scapula and down to about the tenth dorsal spine. In the case of the body of the stomach the pain occurs either in the early stage of digestion, or irregularly, or in the later stages, although not so late as pyloric pain; but œsophageal pain is less likely to occur late than early or irregularly.

5. The *upper œsophagus* is associated with pain above the fourth costal cartilage in front, usually in the centre, and sometimes opposite the upper two-thirds of the scapula behind. It nearly always occurs soon after food or irregularly.

6. The *œsophagus* and body of the stomach are the parts most likely to be affected in the neuropathic patient.

7. As the malady progresses most cases tend to show an increasing irritability of the nervous system, so that there is no sharp line of demarcation separating dyspepsia in the individual of average nervous stability from that in the neuropathic patient.

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THE RELATION OF THE ANTERIOR LOBE OF THE PITUITARY TO THE REPRODUCTIVE ORGANS.

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IT has long been known that disease of the pituitary body has a marked influence on the activity and development of the reproductive organs.

In 1901, Fröhlich,[1] in describing the condition now known as dystrophia adiposo-genitalis, showed that in addition to obesity and lack of growth there was marked atrophy of the genitalia. Cushing [2] and others confirmed his findings, and a large amount of clinical data has accumulated describing the disturbances of sexual function associated with pituitary disorders. It is of interest to note that, although there has been some difference of opinion as to other symptoms produced by pituitary disease, there is more or less general agreement as to the effect on the organs of reproduction. As to which part of the gland is responsible has been the subject of controversy, but experimental work has now proved the anterior lobe to be the responsible factor. Considerations of space do not allow of an analysis of the clinical evidence, but, in short, it can be said that hypo- or hyper-secretion of the anterior lobe of the pituitary leads to more or less corresponding hypo- or hyper-activity of the ovaries and testes respectively, the consequent effects of which are manifested by symptoms which vary according as to whether the condition of hypo- or hyper-pituitarism arises before or after puberty.

Experimental Production of Hypopituitarism.

It was not until Paulesco [3] devised his operative technique that any real advance was made in the experimental study of the function of the anterior lobe, previous work being of such a nature that little reliance could be placed on the results. Paulesco was the first to show that, whereas no symptoms were produced by removal of the posterior lobe, partial removal of the anterior lobe resulted in adiposity.

It was left, however, to Cushing [2] and his co-workers to recognise that the condition produced in full-grown animals by partial removal of the anterior lobe was identical with the pathological condition, dystrophia adiposo-genitalis. In addition to adiposity there was pronounced atrophy of the uterus, but whilst follicles disappeared from the ovary there was persistence of the interstitial cells. Furthermore, partial removal carried out in young animals resulted in a persistent infantile condition of the reproductive organs. Similar results have been obtained by Aschner,[4] Biedl,[5] Dott,[6] and Blair Bell.[7] The last observer found that there was not only well-marked atrophy of the uterus—both of the muscular coats and of the endometrium—and degeneration of the Graafian follicles, but total disappearance of the ovarian interstitial cells. Blair Bell also observed that separation or clamping of the infundibular stalk was even more effective in causing uterine and ovarian atrophy than partial removal of the anterior lobe. Recently Smith [8] has succeeded in restoring to normal condition the degenerated sexual organs of hypophysectomised rats by grafting into them portions of the gland. The results of these investigators not only proved the endocrine nature of the anterior lobe of the pituitary, but also showed the development and activity of the reproductive organs to be dependent upon its secretion.

Experimental Production of Hyperpituitarism.

In the past investigators have studied mostly the condition of hypopituitarism following partial removal of the anterior lobe, but recently attention has been paid to the effects of injection of extracts or the grafting of anterior lobe as a means of production of anterior lobe hypersecretion. Although various reports of the effects of anterior lobe extracts have been made the first definite evidence of activity was obtained by Long and Evans,[9] who showed that the daily injection of extracts of the gland into female rats caused the immediate cessation of the normal œstrous cycle, the cycle remaining in abeyance during the period of the injections. Examination of the ovaries of these animals killed during the inhibition period showed them to be full of substantial corpora lutea. Long and Evans concluded that their extracts were not only toxic to developing ova, but also had a stimulating effect on the growth of luteal tissue. This was substantiated by Teel,[10] who proved that the corpora lutea were functional in so far as sensitisation of the uterus was concerned, since injury to the uterus was followed by the formation of placentoma.

In contrast to the above results has been the work of Zondek and Ascheim [11] and Smith [12] who showed that full œstrus can be produced in three-weeks' old mice and rats by grafting into them portions of anterior lobe. Zondek and Ascheim [13] were also able to produce the same effects by injection of extracts of the gland. Brouha and Simmonet [14] reported similar findings, though they give no details of the method of preparation of their extracts. These observations show that a substance is elaborated by the anterior lobe of the pituitary which stimulates the formation of functional corpora lutea in the ovaries of normal mature animals and has also a marked effect on the immature ovary, causing it within a few days to attain a state of functional activity which it would not reach normally for some weeks.

Scope of Present Investigations.

During the past year investigations have been carried out in this laboratory, and the main principles recorded by Long and Evans and Teel have been confirmed. It was found, however, that the inhibition of œstrus is not dependent upon the daily injection of extracts, since inhibition periods of two to three weeks could be obtained by the single injection of 1·0 c.cm. or less of certain extracts. The end of the inhibition period is indicated in many cases by bleeding from the vagina. These results are in accord with the observations made by Teel [10] on the formation of functional corpora lutea, since the inhibition period following injection are, on the average, of the same length as those which follow from mechanical stimulation of the cervix of the uterus. Potent extracts can

e made from male anterior lobes, a fact which ıvalidates any claim to specific function on the part f the female gland. It is assumed above that the œstrus-producing" factor of Zondek and Ascheim identical with that of Long and Evans, the difference ı results obtained by these workers being due to the ct that the effects produced by extracts varied cording to the stage of development of the injected imals. In consequence, extracts which are highly tive in inhibiting œstrus should be equally, if not ore, active in producing œstrus in immature animals. his, however, was not found to be the case. Many tracts have been made, and, although they have en remarkably consistent in inhibiting œstrus when jected in small doses, so far no "œstrus-producing" tivity has been detected in any of them.

All the extracts have been prepared by the method scribed by Teel,[10] since the writer has found that tracts which are highly potent as regards "œstrus-hibiting" activity can be consistently obtained by is method. A typical experiment is described below.

Expt. 17.—94·2 g. of anterior lobe tissue dissected from ox pituitaries were ground to a fine paste with sand and oroughly mixed with 100 c.cm. of N/10 sodium hydroxide lution. The paste was allowed to stand on ice for 24 hours d was then neutralised with N/2 acetic acid, phenol red ing used as an indicator. On centrifuging the mixture at gh speed for 15 minutes, 114 c.cm. of turbid pink fluid were tained. The fluid was kept in a freezing mixture during e course of the experiment, a requisite amount being awed out each day for injection. The extract was injected traperitoneally in both full grown and immature animals. Fourteen stock rats, whose cycles, previous to injection, d been perfectly regular for a period of two months, were ch injected with 1 c.cm. of extract for four consecutive ys. Of these 14, two showed no change in the normal ogress of their cycles. The remaining 12, however, owed inhibition periods of 14, 12, 17, 15, 13, 12, 17, 12, , 14, 16, and 18 days respectively. At the same time three-weeks' old rats were injected with 1·0 c.cm. of extract six consecutive days. Of these ten, two died on the st and second days respectively. Of the remaining eight single animal manifested any signs of œstrus, either ring or after the period of injection.

Discussion.

This experiment is typical of others and shows at alkaline extracts of anterior lobe, which prove to definitely active in inhibiting œstrus, have no œstrus-producing" effects when injected into mature animals. In view of the fact that "œstrus-oducing" extracts can be made from anterior lobes employing other methods of extraction, it must concluded that there are two distinct substances volved; one of these produces œstrus in immature imals whilst the other inhibits the normal cycle of ature animals; and, whereas the latter is stable to kali, the former appears to be destroyed or precipi-ed by it.

These results are in accord with those of Long and ans,[9] who failed to promote œstrus in immature rats th their extracts, though opposed to those of Teel.[10] e latter claimed to have produced œstrus with his aline extracts, a finding incompatible with the sults obtained by Zondek and Ascheim,[11] who state at the "œstrus-producing" substance is easily stroyed by alkali. Unfortunately Teel gives no tails of his experiments.

Apart from the fact stated above no evidence in sup-rt of the existence of two substances can be obtained m a consideration of the chemistry of extracts, ce the knowledge so far obtained is not only frag-ntary but contradictory. Teel and his co-workers[15] ntend, for instance, that the "œstrus-inhibiting" bstance is precipitated or destroyed by alcohol, and at the production of a slight acid reaction in an ract also leads to its destruction. These results, wever, are in direct opposition to those of Long d Evans,[16] who obtained active "œstrus-inhibiting" racts by treatment of glands with dilute acetic d or with 50 per cent. alcohol. Moreover, their lier extracts were made by grinding anterior es with saline, and since minced glands become d on standing, this in itself should have led to truction of the activity. The writer also found that active "œstrus-inhibiting" material could be obtained by a method which entailed the extraction of the glands with boiling 5 per cent. hydrochloric acid. If the "œstrus-inhibiting" substance is proved to be stable to acid, it differs in this respect from the "œstrus-producing" substance, since Zondek and Ascheim[13] claim that the latter is unstable to acids. The proof of the existence of two distinct substances would be confirmed if it were shown that the "œstrus-producing" extracts of Zondek and Ascheim and Brouha and Simmonet were devoid of "œstrus-inhibiting" activity. Investigations are now being undertaken in the Pharmacology Department at Cambridge with this end in view. Little advance is likely to be made in our knowledge of the effects produced by extracts of the gland till this point is settled, since it may be that some of the results already obtained have been due to the fact that the extracts employed contained varying proportions of both substances.

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CHLOROMA.

A STUDY OF THREE CASES OCCURRING IN CHILDREN WITH POST-MORTEM FINDINGS IN TWO CASES.

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CHLOROMA is a rare disease allied to leukæmia. Up to the end of the year 1926 about 150 cases had been recorded, not apparently some of these were proved beyond reasonable doubt to be chloromata.[1] The children here recorded were all males, aged 2½, 4, and 7 years respectively.

The characteristic feature of chloroma is the presence of firm tumour growths in connexion with the orbits, temporal fossæ, and periosteum of the bones of the skull, although they may occur in other places. Exophthalmos, with hæmorrhage into the upper and lower eyelids as the eyes become prominent, is also a striking sign which makes the disease readily recognisable. In the majority of cases there are firm diffuse bilateral swellings extending into the temporal fossæ; these are seen also on X ray examination of the skull. The growths were confined to the skull in the three cases recorded here, though the periosteum of the bones of the vertebral column, ribs, and sternum have been affected in some of the previously recorded cases.[1]

The tumours grow rapidly and the disease proves fatal in a few weeks. There is generally a peculiar greenish colour around the eyes during life, and other parts of the body are found to have the green colour at a post-mortem examination. One of the patients (Case 3) had the colour a few days before death, and it was also found in his growths. In the second case the green colour was seen quite clearly at the post-mortem, though it was not noticed before death. The green colour was not seen in

the third case and no post-mortem was allowed. The exact nature of the pigment is unknown, although it is thought to be an iron compound.[2]

The blood picture in recorded cases is stated to be sometimes that of lymphatic leukæmia and sometimes that of myelogenous leukæmia. It is significant, however, that nearly all the cases recently thoroughly examined have been thought to be myelogenous. Piney states that the blood is always myeloid in type.[3] The leucocytosis is not generally so marked as in cases of the typical leukæmias, but appears from the literature to be very variable, and in any one case the number of leucocytes in the blood may show enormous changes in relatively short periods of time. The lowest white count recorded is 3200 per c.mm.[4] and the highest 1,880,000 per c.mm.[5] There is a very marked anæmia.

The spleen was not increased in size in any of the three cases, but the liver was moderately enlarged. There was no actual loss of sight in any case, except perhaps in the last few days of life, when the cornea became ulcerated, with much conjunctivitis due to advanced proptosis. Each of two patients had a discharging ear, which started before the symptoms of chloroma became definite. There was no deafness. Headache, or at least pain in the eyes, was a marked and distressing symptom in each case and had to be relieved by hypnotics. There were no enlarged lymphatic glands and no purpuric spots in the skin. The reflexes were normal and there was no vomiting. All the patients wasted rapidly and died after an illness which lasted only a few weeks.

CASE 1.—A boy, aged 4 years, was admitted to hospital on Nov. 9th, 1927. He had had scarlet fever three months previously, followed by ear discharge. A month before admission he had had swelling of the eyes in the morning, which went down as the day progressed. He was then thought to have nephritis. Two weeks before admission to hospital swellings appeared over the eyes and he complained of headache. Apart from this he had been healthy.

Condition on Admission.—He was anæmic and thin. The skin was normal in colour. There was very marked exophthalmos, equal in both eyes. This gave him a most peculiar uncanny appearance, and, in fact, some of the other children in the ward were frightened of him. There was some conjunctivitis in the left eye. Directly above each eye there was a firm almond-shaped tumour, fixed to the frontal bone; it was these tumours which caused the proptosis. There was also a tumour growth in each temporal fossa. X ray examination of the skull showed some opacity behind the eyes. There was a discharge from the left ear. The heart, lungs, spleen, and urine were normal, though there was a hæmic murmur at the base of the heart. The liver was slightly enlarged. The reflexes were normal. The mouth was dirty and the tonsils enlarged. Dr. T. M. Bride examined the eyes, and reported that the discs were pale and that there were hæmorrhages into the retina on each side. There was no optic neuritis and the sight was good.

After admission to hospital the patient rapidly became worse and the headache more intense. The eyes began to bulge more as the tumour growths increased and became trophic, with much ecchymosis into the lids. The swellings in the temporal fossæ also increased in size.

The blood examination was as follows: Red blood corpuscles, 1,954,000 per c.mm.; leucocytes, 27,600 per c.mm.; hæmoglobin, 24 per cent.; colour-index, 0·6. The differential count (per cent.) was: Polymorphs, 17·6; lymphocytes, 78·6; large mononuclears, 2·4; eosinophils, 0; mast cells, 1·6. The red cells did not show anisocytosis or poikilocytosis. Blood-platelets were scanty. Unfortunately an oxidase reaction was not performed.

The child died on Nov. 26th after an illness of just over six weeks. No post-mortem was allowed.

CASE 2.—A boy, aged 2½ years, was admitted to hospital on Nov. 16th, 1927, a week later than the previous case. It is curious that two similar cases of such a rare disease should come for treatment within a week of each other. The previous history and family history were excellent. Six weeks before admission to hospital he began to have swelling of the eyelids, and at the same time a swelling was noticed in the left temporal fossa. The swelling over the eyes slowly increased and the eyes became prominent. There had been no œdema of the feet. The appetite was good and he had not lost much weight. He had, however, become pale, and complained of headache.

Condition on Admission.—He was very anæmic and there was a marked proptosis of the eyes, with congestion of the lids. Behind the upper eyelids there were firm, fixed almond-shaped swellings, and there were diffuse swellings in each temporal fossa. There was no discharge from the ears. The heart was normal and there was no œdema. The spleen could not be felt, but the liver was slightly enlarged. There were no enlarged glands. The urine was normal. Dr. Bride examined the eyes and reported that the fundi were normal. An X ray examination of the skull showed some opacity behind each orbit, but nothing else.

The patient became rapidly worse and the headache more severe. No green coloration was seen at any time. Death took place on Dec. 10th after an illness which had lasted about 10 weeks.

A report of the blood examination on Nov. 20th was as follows: Red blood corpuscles, 3,568,000 per c.mm.; leucocytes, 14,200 per c.mm.; hæmoglobin, 42 per cent.; colour-index, 0·6. Differential count (per cent.) (500): Polymorphonuclears, 27·2; lymphocytes, 70·4; large mononuclears, 2·4; eosinophils and mast cells, nil. There was no aniso- or poikilocytosis. Platelets were scanty. A film only was supplied on Dec. 8th, two days before death, and this gave a differential count (per cent.) (500): Polymorphonuclears, 6·6; lymphocytes, 31·0; large mononuclears, 2·0; eosinophils and mast cells, nil; neutrophil myelocytes, 2·2; myeloblasts, 58·2. The polymorphonuclear cells and lymphocytes (which were nearly all of the small variety) had normal appearances in the Leishman film. The cells, which have been classed as myeloblasts, were fairly large, non-granular, mononuclear cells with slightly basophilic cytoplasm, which varied in amount but was generally only a rim around the nucleus. In quite a number of these cells 3, 4 or 5 nucleoli could be seen. The red blood corpuscles showed slight poikilocytosis and well-marked anisocytosis; no nucleated red cells were seen. Platelets scanty.

Chloroma in a boy aged 4 years showing the marked exophthalmos.

As only one stained film was submitted for examination and the child died before others could be obtained, films were prepared from blood taken post mortem. The oxidase reaction, carried out according to Shaw Dunn's method, gave the following result (per cent.) (1000 counted): Positive reaction, 67·3; negative reaction, 32·7. The majority of the cells classed as positive gave a well-marked reaction and a few a faint reaction. This result, together with the appearance of the Leishman film, was considered sufficient evidence for classing the cells as myeloblasts. In the former count (done 3 weeks earlier) no oxidase reaction was carried out, and the mononuclear cells were all classed as lymphocytes.

Post-mortem Examination, Performed 24 Hours after Death.—There was a moderate degree of emaciation; no petechiæ. hæmorrhages were found on the skin. The head was abnormally large for a child of this age, and the eyes showed very marked proptosis with much ectropion of the lower eyelids and marked ulceration of the palpebral conjunctiva more advanced on the left side than on the right. There were no pleural adhesions and the pleura was free from petechial hæmorrhages. The right lung did not show any gross changes. The lower lobe of the left lung was consolidated, and on section showed patchy broncho-pneumonia. No petechial hæmorrhages could be detected in the pericardium, and there was no excess of free fluid. The heart was normal in size and there were no gross changes in the cardiac muscle or in the valves. The spleen was not enlarged and was of firm consistency; the Malpighian bodies stood out very distinctly. There was no perisplenitis. The liver did not appear to be enlarged. On section the mottling characteristic of early fatty degeneration due to congestion was seen. The kidneys did not exhibit any gross changes and were normal in size. The Peyer's patches and lymph glands did not show any abnormality.

Skull: When the orbital roofs were removed, a retro-orbital tumour was exposed on each side, stretching across

e whole width of the orbit and appearing as bands about 5 cm. in width and 0·5 cm. in thickness at the thickest rt. They had no connexion with the skull except at eir extremities where they were attached to periosteum. hen first exposed they were of a dark olive-green colour, t this changed to a dirty brown shortly after exposure. ese masses were hard and seemed very fibrous on section. trace of green coloration could be found in the marrow tween the diploe. The brain, which weighed 1600 grms., peared normal externally and there was no marked ttening of the convolutions. On section it showed multiple fuse hæmorrhages, chiefly in the white matter, most of the morrhages being of pin-head size and some being slightly ger. The meninges appeared normal and there was no n of hydrocephalus.

The right femur was uniformly filled throughout its whole gth with marrow of a dark olive-green colour. The our faded slightly after exposure, but still had a greenish t next day. No areas of hæmorrhage were seen in the rrow. The rib marrow was similar in appearance.

Histology.—The two retro-orbital tumours gave similar tological appearances. For the most part they consisted a dense fibrous stroma, of poor vascularity, containing a y non-granular mononuclear cells of medium size with y varying amounts of cytoplasm. In fact, the appear-ce under the low power of the microscope was similar to t of granulation tissue, but in two distinct areas the rous stroma was diminished and the tissue was highly lular. These cells were similar in appearance to those n in sections of the bone-marrow, and had nuclear staining h as is found in myeloblasts. Portions of nerves were nd in the sections of the tumour, and at one part the nour cells had infiltrated muscle-fibres. Many of the ls scattered throughout the stroma gave a faint positive dase reaction, and practically all those in the more lular portions of the tumour were positive, about 50 per t. strongly and 50 per cent. more weakly.

Marrow : Sections of the marrow showed the fat cells to few in number. The tissue was almost entirely composed non-granular mononuclear cells lying in a light reticulum. e cells varied a fair amount in size and in the amount of oplasm. Most of these cells were considered to be eloblasts. Films of fresh marrow stained by Leishman's thod showed few eosinophil and basophil myelocytes. e red blood corpuscles were scattered sparsely throughout marrow, and normoblasts were scarce. No megalo-yocytes could be seen. Wet fixed films of marrow rrosive alcohol) stained by hæmalum and eosin showed fine fibrillar character of the nuclei of the predominating nonuclear cells. The oxidase reaction was faintly itive for the majority of cells, but the reaction was not so rked or so diffuse as in the leukæmic cells in other organs.

Spleen : The capsule appeared to be stretched ; the lymph icles were numerous and showed up well, but the central sel was often thickened and sometimes almost occluded. e pulp contained a mixture of roughly equal numbers of corpuscles and mononuclear cells similar to those seen he bone-marrow. In mercury-fixed preparations stained eosin and methylene-blue, these cells were larger than the ghbouring lymphocytes in the follicles and did not stain rly so deeply. A few normoblasts were seen in the pulp. the oxidase method the unstained lymph follicles stood in marked contrast to the pulp-cells, the majority of ch were strongly positive.

Liver : The portal tracts showed small collections of nonuclear cells, and there were very small groups of se cells scattered about in the dilated capillaries. Central gestion was very marked, with large numbers of red puscles and a few mononuclear cells lying around the r cells, which were undergoing fatty degeneration. The dase reaction was positive for the mononuclear cells.

Brain : Sections of the brain showed a large number of all hæmorrhages. Some of these were merely collections ed blood corpuscles, but many consisted of a small dense ection of mononuclear cells, around which was a ring of corpuscles several layers in thickness. It seems probable these were leukæmic infiltrations with surrounding morrhage. The cells in the centre of these infiltrations e a strongly positive oxidase reaction.

Kidney : A small amount of congestion was noted, but no ection of white cells. The oxidase reaction was slightly itive in a few of the cells in the glomeruli and in occasional s in the connective tissue.

Heart : Nothing abnormal was detected.

Lung : Sections of the lower lobe of the left lung showed nsive broncho-pneumonia. The capillaries were much ted, and hæmorrhages were present in many parts. alveolar walls were very thickened and the type of was chiefly mononuclear, although polymorphonuclear ocytes were also present in fair numbers. A large mber of the cells in the consolidated portion were oxidase-itive. Films of the tissues stained by the ferrocyanide hod showed a very small amount of free iron in a few of the liver cells and a larger amount in the spleen. The reaction for the other tissues gave no result.

CASE 3.—A boy, aged 7 years, was seen and observed in September, 1922. A full report of this case with the post-mortem findings by Dr. A. Sellers has been published in THE LANCET.[7] This case was very similar to the previous two cases. The green colour was seen in the eyes before death and the tumour growths were found to be greenish at the post-mortem.

We desire to thank Dr. T. H. Oliver for obtaining permission for the post-mortem examination in the second case, and also Dr. A. E. Somerford and Dr. W. Susman for their help.

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Clinical and Laboratory Notes.

A CASE OF SPLENIC ANÆMIA DUE TO A STREPTOTHRIX ORGANISM.

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WITHIN the last two years considerable interest has been reawakened in the mycotic hypothesis of the origin of splenic anæmia and Banti's disease first put forward by one of us in 1913.[3] Nanta and Pinoy [4] in 1926 described certain cases of Algerian splenomegaly as due to a variety of aspergillus to which they gave the name *Sterigmatocystis nidulans*. Weil, Gregoire, and Flandrin [5] in 1927, amongst 16 cases of splenomegaly in Paris, found seven which they ascribed to a mycotic cause and in two of these they were able to obtain a culture of an aspergillus. A discussion on the subject is reported in the *Presse Médicale* for Oct. 26th, 1927, and Askanazy and Schweitzer [6] described in 1927 a case they had observed in 1911.

It has therefore been thought desirable to bring forward this case, even though the pathogenicity of the organism has not been confirmed upon a second animal. The result corresponds in all respects to the animal experiments conducted by one of us with another organism, and coincided with a series of experiments with similar organisms on other monkeys with proper controls. The effect on the health of the animals was clearly interfered with in each case. The animal used for the present experiment suffered from tuberculosis as a terminal infection, for diarrhœa, which is almost invariable in this disease, was absent until August, 1924, when it is to be feared that it may have got access to infected food ; it was following this that the spleen was found to be very much larger than before. In a previous series [2] of experiments with three monkeys (*Macacus rhesus*) all succumbed within a few weeks of the injection to generalised tuberculosis.

The Case Described.

A girl of 11 was first admitted to Guy's Hospital under the care of one of us (J. F.) in November, 1913. Six weeks previously she had vomited after an attack of fainting, and three weeks later she was stated to have had three attacks of hæmatemesis. During this period there was continued

pyrexia. The only relevant item in the previous history was that there had been otitis media after an attack of measles at 4 years of age.

Condition on Admission.—She was anæmic and very ill. The blood count was as follows: red cells, 2,050,000; white cells, 18,750; hæmoglobin, 19 per cent.; colour-index, 0·42; differential count: neutrophils, 70 per cent.; lymphocytes, 29 per cent.; mast cells, 0·5 per cent.; normoblasts, 0·5 per cent. The spleen was much enlarged, reaching nearly to the level of the umbilicus, and ascites rapidly developed and required paracentesis, when a chylous fluid of sp. gr. 1011 was withdrawn; it contained cholesterol and globulin, but no cells.

Throughout this part of the patient's stay in hospital and for the next two months pyrexia continued. The fluid in the abdominal cavity reaccumulated but disappeared again. In January, 1914, a discharge from the left ear, which had been present intermittently since the age of 4 years, became worse, with suppuration in the mastoid, for which operation became necessary. The day after the operation severe hæmatemesis recurred and again on the two following days, and the patient became very ill. The *Bacillus diphtheriæ* was detected in the nasal discharge. Pyrexia persisted till the middle of March, 1914, after which it gradually subsided and the patient was discharged from hospital in the middle of May. At this time the red cells were estimated at 5,512,000 c.mm.

The patient was readmitted into Guy's Hospital in December, 1921. She was now 19 years of age and had been at work regularly since leaving the hospital in 1914, and without any illness until the day before admission when, after an attack of coughing, she vomited a large quantity of blood and passed blood in the stools on the following day. She had been married recently and was about three months pregnant. She was pale, and the blood count was: red cells, 3,200,000; white cells, 5320; hæmoglobin, 34 per cent. The spleen was large, smooth, and hard, and extended to just below the level of the umbilicus. Apart from a hæmic cardiac murmur no other abnormal physical signs were found on examination. The fragility of the red cells was normal, and the Wassermann reaction negative. By Jan. 3rd, 1922, the red cells had risen to 4,000,000 and the hæmoglobin to 54 per cent., and, by the end of the month, to 69 per cent. On Feb. 6th the blood count was as follows: red cells, 3,900,000; white cells, 6200; hæmoglobin, 78 per cent.; colour-index, 0·9. Differential count: neutrophils, 65 per cent.; lymphocytes, 30 per cent.; hyalines, 5 per cent. Early in March she had another hæmatemesis and the hæmoglobin dropped to 42 per cent. On March 7th Sir Alfred Fripp removed the spleen, which was free from adhesions except for a few at the upper pole which were easily dealt with. She recovered well from the operation and left the hospital in April, 1922. There is no record of the presence of cirrhosis of the liver, nor of the weight of the spleen after removal.

After leaving hospital in 1922 she progressed well until the early part of 1927, when hæmatemesis recurred on two or three occasions, but by March of that year she appeared to be in good health and her hæmoglobin content was about 70 per cent. of the normal.

Remarks on the Clinical Condition.

The case is given the title of "splenic anæmia" in that it belonged to the group of very chronic enlargements of the spleen with "secondary anæmia" for which no cause could be found. It seems possible, in view of the ascites which appeared in 1913, but which did not recur, that some cirrhotic change might already have been present in the liver. There was no evidence of peritonitis at that time; nor later, at the time of the operation, was any cause discovered to account for the ascites. If this suggestion is correct it is of interest to recognise the "latency" of the cirrhotic state from 1913 to 1921 and again after the splenectomy for a period of five years, and that even now there is, clinically, no evidence of cirrhosis of the liver. It is well recognised that the condition of the liver is one of the most variable features of splenic anæmia, and unless there are gross signs it is not possible to determine the presence of cirrhosis clinically. Another important feature is the recurrence of the hæmorrhage five years after the splenectomy, a rare but not unknown event, the possibility of which must not be forgotten in making a prognosis. However, as 15 years have passed since the condition was first recognised, it is quite possible that a quiescent state may yet ensue in our patient, the cirrhotic change, if present, being within such limits that the remainder of the liver tissue is sound enough to allow the viscus to function, and so to maintain a level of fair general health.

Summary of Blood Counts.

Date.	R.b.c.	Hb.	C.I.	W.b.c.	Differential count.
1913.					
November..	2·0	19	0·5	18,000	P. 70, L. 29.
1914.					
Jan. 1st ..	2·9	45	0·7	17,000	P. 49, E. 6, L. 39. Some pk.; no ac.
„ 22nd ..	5·0	70	0·7	4,301	P. 60, E. 2, L. 36. No change in red cells.
Feb. 11 (*a*)	—	—	—	—	—
Mar. 24th ..	1·4	26	0·9	10,000	P. 83, L. 11. Ac.; 4 normoblasts, 1 myeloblast.
April 24th..	3·9	46	0·6	5,000	P. 60, E. 1, L. 30; 2 normoblasts.
1921.					
November..	3·2	34	0·5	5,300	
1922.					
January ..	4·0	54	0·7	6,000	
February ..	4·0	78	1·0	6,000	P. 65, L. 30, H. 5. No change in red cells.
Feb. 15th (*b*)	—	42	—	—	—
Mar. 3rd ..	—	48	—	—	—
„ 7th (*c*)	—	—	—	—	—
„ 19th ..	4·6	55	0·6	4,000	Slight pk. and ac.
1927.					
February ..	4·1	69	0·84	4,000	Diff. count normal.

P., polymorph; L., lymphocyte; E., eosinophil; H., hyaline pk., poikilocytosis; ac., anisocytosis.
(*a*) Operation upon left mastoid. (*b*) After hæmatemesis (*c*) Splenectomy.

Pathological Investigation.

About one-half of the spleen was despatched to Oxford packed in a sterile towel and received by one of us (A. G. G.) on March 8th, the day after the operation.

The shape was preserved and externally there was recent perisplenitis. There were several deep congenital fissures. On section the spleen was mottled, Malpighian bodies were present, the pulp was firm and trabeculæ were seen in increased numbers. Here and there minute pigmented scars could be seen.

Microscopically the whole substance of the spleen, both pulp and trabeculæ, was more fibrous than normal, and the trabeculæ were thick. Malpighian bodies were of loose texture, and the central artery was thickened. The pigmented scars were similar to those that have been described previously, and which are referred to in continental literature as the nodules of Gandy-Gamna. They had a well-defined outline and consisted of a felted network, much of which was impregnated with iron. This network was here and there aggregated into bundles, some of which had a glistening hyaline appearance. Some of the nodules had a hæmorrhagic zone surrounding them. Under the oil immersion objective hæmotoxylin-stained threads of varying thickness could be detected in the periphery on careful search. Some of these showed true branching. Here and there were clear interruptions in their course, and long rod-like forms could also be detected. Anatomically these appearances conformed to the morphology of a streptothrix organism. There was no appearance suggestive of the spore head of an aspergillus but there were circular forms varying in size from that of a coccus to somewhat larger. There was a moderate degree of endophlebitis.

On March 8th 24 cultures of the pigmented points in the trabeculæ were made in serum broth. On the 9th there was no obvious contamination. On March 20th, 12 days after inoculation, two tubes showed a few streptococcal forms. These forms have been observed on several occasions in splenicultures, but on no occasion has it been possible to isolate an ordinary streptococcal growth in subculture. After 24 days one tube was found to show minute snowball like growths in the bottom of the tube, the medium being clear above. This was found to be a streptothrix with true branching, easily subcultured on agar and broth. Contamination appeared in two tubes after four weeks, but no other tube showed any streptothrix growths. The organism grew vigorously and conformed both morphologically and culturally with that described by one of us.[1]

Animal Experiment.

This type of streptothrix organism, when previously isolated from splenic culture, has been found to be pathogenic to monkeys only.[2]

A male adult bonnet monkey (*Macacus sinicus*), therefore of estimated age about 7 to 8 years, in very good condition, tame, and weighing 613 g., was used for the experiment. It was observed for four weeks before injection; there was

nothing abnormal to be felt in the abdomen, although the kidney on the left side was palpable. There was no tenderness in any part. Blood counts were done on three occasions and the hæmoglobin and red count increased slightly during the month. On Nov. 8th, 1923, the abdomen being found normal, 1 c.cm. of an emulsion in saline of a three-day sloped agar culture of the organism was injected intraperitoneally. There was a little restlessness for half an hour after the injection. The animal was found to be normal on Nov 9th and 16th. On the 23rd, 15 days after the injection, there was a slight flexion of the toes at the first tarsal joint which had not been noticed before, and there was doubtful abdominal discomfort on palpation. The appetite was very good. On Dec. 17th there was distinct abdominal tenderness on the left side. The spleen was felt, short and stumpy, and the kidney was tender. The gait was, if anything, slightly cramped, but strength, appetite, and coat were good. The blood culture on Dec. 31st was negative. On Jan. 31st, 1924, the spleen was again felt as a hard organ, and it was noticed that the animal yawned frequently. A second emulsion of a five-day culture of the organism was injected intraperitoneally. On Feb. 29th the spleen again felt hard and tender, and the blood culture on this date was again negative. On March 26th the spleen was easily felt and the animal was pale; the blood culture was again negative. On May 8th, 1924, the animal was pale, but strong and eating well. Nothing could be felt in the abdomen, but resistance was marked. Movements were not so active. The third injection of the organism intraperitoneally was made; there were no ill-effects next day. On June 12th it was noted that the animal was pale and going downhill. Movements were more deliberate when climbing, and the spleen was felt to be enlarged. The blood culture was again negative, though in three tubes long bacillary forms could be seen microscopically. On June 26th the animal was seen to sit more and there was less spring in his movements. The appetite was good.

During August, 1924, owing to the holiday, there was unavoidably some change in the care given to the feeding. On Sept. 4th the animal's coat was poor. There had been some diarrhœa and the spleen was easily felt, solid and tender. The weight, which had been 653 g. at the end of July, was 571 g. on Sept. 2nd. On Sept. 22nd another blood culture was taken. In one out of six tubes inoculated there was found, 29 days later, a growth of streptothrix of the same type as that injected. After that date the animal became increasingly pale and hypernœa on exertion was marked. The spleen was enlarged, easily felt, thick, and tender. Some diarrhœa was noticed, but the appetite continued good until a few days before it was killed on Nov. 10th, 1924. The post-mortem examination showed advanced tuberculosis with large caseous masses in the omentum, spleen, and lungs and posterior mediastinal glands, and a few scattered foci in the liver. Microscopically the presence of tubercle bacilli was confirmed, though they were not isolated in culture.

Summary.—Gradual decline in health followed intraperitoneal injections of the streptothrix organism, together with enlargement of the spleen, persistence of appetite, and tenderness of the abdomen. There was a terminal infection with the tubercle bacillus.

On the facts here described—the isolation of the organism, its pathogenicity to a monkey, and re-isolation by blood culture from the animal—we submit that Koch's postulates have been fulfilled and that the streptothrix organism is the cause of the disease. The organism was submitted to Sir Aldo Castellani, who regarded it as a species of nocardia.

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A METHOD OF TREATING LUPUS VULGARIS.

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The treatment of lupus vulgaris aims at the eradication of the disease with the production of a supple unnoticeable cicatrix. Numerous methods have been employed with varying degree of success. During the last 18 months, with the permission of the honorary medical staff of the Manchester and Salford Hospital for Skin Diseases, I have employed a treatment which has been so satisfactory that publication seems to be justified.

Method.

The skin over the diseased area is washed with soap and water and any fatty material is removed by swabbing with methylated spirit. The whole area, or a portion of it if the whole is large, is painted with the liquor hydrargyri nitratis acidus. This is best applied by wrapping a little cotton-wool round the end of a match and soaking it in the acid, which is rubbed well into the diseased tissue until coagulation occurs, when the tissues become grey. This process may be rather painful, and in nervous patients it may be advisable to paint the area previously with a solution of novocaine. The painted area is then covered with lint spread with the following ointment:—

℞ Ac. carbol., ℥ xv.; ung. zinc., ℥i.

The dressing is made air-tight by overlapping pieces of surgical strapping and completed by a pad of wool and a bandage. This is left in position for 48 hours, and on removal ulceration, with some pus formation, is found to have taken place. In many cases one application is sufficient, but the process may be repeated any number of times. When ulceration has proceeded deeply enough the dressing is replaced by lint spread with Brooke's ointment:—

℞ Ung. hyd. oleat., 10 per cent. (B.P. 1885), ℥ii.; acid. salicyl., grs. xv.; ichthyol., ℥xv.; zinc oxid., ℥iss; amyli, ℥iss; paraffin. moll., ad. ℥i.

When the area has completely healed it will be possible to see if any tuberculous tissue remains, in which case the areas still diseased can be re-treated.

Results.

In actual practice I have found that two applications usually transform a tuberculous plaque into a supple scar with a few nodules at the periphery which can readily be dealt with. This is illustrated in the following cases:—

Case 1.—A youth, aged 23, had suffered from lupus vulgaris of the neck for many years. It had been treated by X ray therapy which had left a mottled and unsightly cicatrix. The upper edge had relapsed with the formation of a raised plaque of tuberculous tissue about the size of a florin, showing typical apple jelly nodules. A month after treatment by one application of the above method, the tuberculous area was replaced by a supple cicatrix which was slightly erythematous but not depressed below the level of the surrounding skin, and evidence of tuberculosis was not present. I saw the patient again one year after treatment and the scar was still healthy and almost unnoticeable.

Case 2.—A woman had a plaque of lupus on the left cheek; the nodules were raised above the surrounding skin and had become confluent. After treatment the area was ulcerated but not very deeply, so the treatment was repeated and then the area was allowed to heal. The mass of tuberculous tissue was replaced by a whitish supple scar in which were embedded discrete apple jelly nodules which were subsequently dealt with by spiking with the liquor hydrargyri nitratis acidus.

I have also used this method to ulcerate the skin before applying powdered potassium permanganate crystals: the crystals are applied directly to the ulcerated surface and then moistened with cold water. This gave a good result in one case in which all previous treatment had proved useless.

The advantages of this treatment are: (1) it is easily performed in an out-patient department; (2) it is inexpensive and usually causes very little pain; (3) the cosmetic result is good; (4) the disease is efficiently treated and recurrences are less frequent than when the disease is treated by erasion.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF LARYNGOLOGY AND OTOLOGY.

THE joint summer meeting of these Sections was held in London from May 31st to June 2nd. At the first session Mr. J. F. O'MALLEY took the chair, and a paper on

Achalasia and Degeneration of Auerbach's Plexus

was read by Mr. A. T. RAKE. The plexus, he said, was really a cell station for the vagus nerve-fibres. These nerve-fibres ran to the plexus, whence new fibres passed to the muscle-fibres. The function of the vagal supply was the two-fold one of preserving the normal œsophageal tone and supplying the cardiac sphincter; it caused relaxation of the sphincter preceding the normal peristaltic wave which took the food into the stomach. Therefore any lesion of the vagal nerve-fibres would upset this relaxation of the cardia which must take place before food could reach the stomach. Lesions might be proximal to Auerbach's plexus, or in the plexus, or distal to it. In some achalasic cases the plexus was found to be about twice its normal size, the whole of it being infiltrated with small round cells. In addition there were multiple vessels not seen in the normal Auerbach's plexus. In the chronic stage there were around the fibrous plexus large blood-vessels with thickened walls; the appearance was, indeed, so typical that it had been suggested that change was primarily vascular. Mr. Rake, however, was strongly of opinion that the change was primarily inflammatory. In none of the many sections which he had examined were there any ganglion cells.

The chairman (Mr. O'MALLEY), said that Dr. Brown Kelly, when he lectured on the subject last year, had not committed himself beyond saying it was a neuropathic change which occurred in this condition; but the present communication carried the matter a step further. "Cardio-fibrositis" seemed a better name for the condition.

Dr. A. F. HURST said it had occurred to him, 15 years ago, that spasm did not constitute an adequate explanation of achalasia. In some of the cases hypertrophy of the cardiac sphincter was found, but not in all; and he thought that the condition was parallel to Hirschsprung's disease in the intestine, in which there was absence of the normal relaxation of the sphincter. Years ago he had suggested that some organic change would be found in Auerbach's plexus in these cases.

Dr. A. BROWN KELLY considered that Mr. Rake was the first to describe fibrotic changes as a cause of destruction of nerve-cells in the plexus, but Dr. Munro Cameron had demonstrated these changes in cases of cardiospasm. The case upon which Mr. Rake's paper was based appeared to be rather one of hypertrophy of the wall of the œsophagus, but without dilatation; the patient had not had any symptoms of cardiospasm. Dr. Kelly's own view was that the degenerative changes in Auerbach's plexus gave rise to incoördination of the myotonic reflex in the affected region, that in consequence of the involvement of nerve-cells and their connexions the transmission of stimuli was interrupted, so that they might not reach the distant longitudinal layer. Hence the latter might remain inactive while the circular layer contracted.

Mr. W. STUART-LOW had found that many disabilities due to such conditions yielded to the use of warm olive oil as a lubricant to the œsophagus.

Mr. W. M. MOLLISON read a paper on

Dysphagia due to Pharyngeal Paralysis.

Patients often presented themselves, he said, because of difficulty in swallowing, but it was not common for this to be due to paralysis of the pharyngeal wall. Yet in the last few years he had seen several such cases. Unfortunately the symptom could not be treated with much chance of success. Complete unilateral paralysis of the vagus caused unilateral paralysis of palate, pharynx, and larynx, but there was only slight interference with swallowing. When laryngeal paralysis was complete, the cord was flaccid, both adductors and abductors being paralysed. It was possible to imagine a small hæmorrhage occurring in the middle of the nucleus ambiguus which would damage the fibres to the pharyngeal plexus, and as the effects of the bleeding became localised, the effect might be restricted to the palate, or the pharynx or larynx. Causes of pharyngeal paralysis could be classified into: (*a*) central; (*b*) intracranial; (*c*) extracranial; (*d*) peripheral (as from diphtheria or lead poisoning). The prognosis in the condition when due to diphtheria was favourable, but it was serious when the disability was due to progressive muscular atrophy and amyotrophic lateral sclerosis; it was somewhat better in acute bulbar paralysis. Mr. Mollison gave details of the cases he had seen, including two in which the lesion was at the base of the skull (one from a bullet wound, the other from tuberculous glands). A great difficulty in all the cases was that the patient was unable to get rid of his saliva. Cases of the kind were not infrequently diagnosed as whooping-cough. Five of the six cases recovered, apparently permanently.

Dr. LOWNDES YATES read a paper on

Post-operative Hœmorrhage.

The title of the paper was "methods of estimating the liability to post-operative hæmorrhage from unsutured wounds." It was based upon cases in his experience in which hæmorrhages had occurred after tonsillectomy, though he had ligatured every bleeding point. In two of them the patients gave a history of spontaneous epistaxis. In one case of epistaxis he noticed that the blood from the nose did not appear to clot. He found that in three-fifths of the cases of spontaneous epistaxis the clotting-time was prolonged—i.e., it was from 6 to 50 minutes. Calcium did not reduce this time. To one of the patients having acidosis he gave sodium bicarbonate, and the clotting-time thereafter returned to the normal. Cases of epistaxis were similarly benefited as soon as the sodium bicarbonate had rendered the urine alkaline. Liability to hæmorrhage recurred about a month after the administration of the sodium bicarbonate was stopped. Clotting was brought to the normal also by dealing with a focal sepsis when such existed. He next investigated cases with a toxic focus but whose blood-clotting-time was normal. Some had a highly acid urine which took a long time to become alkaline when sodium bicarbonate was given. It was thus clear that the alteration in the clotting-time did not depend on the presence of every type of compensated acidosis, only on some special type. His surmise was that the organisms in a toxic focus, when they led to acidosis, elaborated acid products which had a greater affinity for some bases than for others, and that when an acid was elaborated which had a great affinity for calcium, it combined with the calcium of the blood all of which was no longer available for activating fibrin ferment. Knowledge on these points had enabled him to escape trouble due to post-operative hæmorrhage. The simple clinical method he followed was to put on a slide a drop of blood from the ear. On clotting, the blood ceased to run down the slide, which was then moved into a vertical position. When the blood was clotted the ear was again examined to see if the pin-prick was still bleeding. Cases in which the clotting-time was prolonged before the operation and caused excessive hæmorrhage during its performance had a tendency to secondary hæmorrhage afterwards. In this class there was a compensated acidosis, and if this was recognised and remedied before the operation, the liability to hæmorrhage in these cases was apparently removed. In many cases of secondary hæmorrhage it

as the clotting-time, not the surgeon, which was at ault. When the clotting-time was long it was difficult o see which were the bleeding vessels, as the whole rea appeared to be oozing; but sprinkling a finely ivided powder, such as bismuth, would cause a leeding artery to stand out red on the whitened rface.

The CHAIRMAN said that for a number of years e had been in the habit of giving patients, especially ildren, some alkali three or four days before operation nd until about three days afterwards. He had the lea that it was good from the point of acidosis and iat of hæmorrhage. Post-operative hæmorrhage emed more common when chloroform was the næsthetic than when ether or nitrous oxide was sed. Crile's view was that it was because the blood ressure was depressed by chloroform.

On the afternoon of May 31st the Sections met nder the chairmanship of Mr. HAROLD BARWELL.

A paper was read by Mr. A. J. WRIGHT (Bristol) on

The Signification of Silent Tracheotomy.

It was based upon two surgical accidents, one of hich was the following. Eight years ago, in connexion ith an operation for submucous resection, he pplied a finger of a rubber glove filled with gauze. he patient was found not to be breathing, and on the duction of artificial respiration no air was entering. he plugs were found to be missing from the nose. racheotomy was carried out and artificial respiration sumed. One of the two plugs was extracted from ie bifurcation of the trachea, and the patient covered. In neither of the two cases was there ough, nor were there obvious signs of asphyxia, ough cyanosis occurred and tended to increase. he whole picture was that of an overdose of nasthetic, but a significant difference was that there as no sound of any air entering the lungs; also, n opening the trachea, instead of the usual explosive ish of air, there was silence. The cases showed that lockage of the bifurcation of the trachea by a foreign dy did not necessarily produce obvious signs of sphyxia. Some of the deaths which had been scribed to the anæsthetic might have been due to ich an accident as he had related.

The paper was discussed by Mr. MOLLISON, Mr. USGRAVE WOODMAN and Mr. M. VLASTO.

Dr. P. WATSON-WILLIAMS read a paper on

Familial Infectivity of Chronic Sinusitis.

e laid stress on the importance of bearing in mind iat members of some families had an inborn predis- osition to catarrhal infections. A child, when the ubject of chronic nasal sinus infection, rarely escaped fection of tonsils and adenoids, and when these ad been removed the persistent re-infection of the maining lymphoid tissue caused recurrent symptoms, nd the child would infect brothers and sisters, even ough relative immunity might be conferred by uto-immunisation. Dr. Watson-Williams showed the isease records of several families to support his ntention, the list of disabilities including cholecystitis nd appendicitis. The diagnosis of a "common cold" ften covered a serious condition.

Mr. STUART-LOW drew attention to the importance damp marshy localities in causing and maintaining ronic catarrhal infections. Mr. MUSGRAVE WOODMAN aid the possibility of the nurse infecting the children ould always be enquired into. Dr. J. S. FRASER voured the idea that some people had what could e termed a catarrhal diathesis.

Sir STCLAIR THOMSON read a paper on

ntrinsic Cancer of the Larynx Operated through a Laryngo-fissure.

e said he had recently completed a series of 70 cases f laryngo-fissure for intrinsic cancer of the larynx, part from those in which he had followed this route o treat enchondroma or for exploration. He had btained the after-history of each of the 70 cases. The series extended over 28 years, as the disease, compared with malignant disease elsewhere, such as of the breast, was very rare. His object in these cases now was to go as far down into the subglottic space as possible and up on to the ventricular band and to remove everything between those points, including the internal perichondrium, leaving only the external perichondrium. The dangerous area was the subglottic space, and he liked to get away not only the anterior commissure, but a little tissue to the other side of it.

Laryngo-fissure gave an excellent result. Sixty cases were private ones, 10 were hospital patients. In females the disease occurred earlier in life than in men, but in men its onset continued later. Of the 70 patients, 34 were still alive 3 to 19 years after operation. There had been 18 deaths from causes other than recurrence and 3 deaths from operation—namely, 1 from rupture of œsophagus due to vomiting, and 2 from bleeding; these two patients would probably not have died if they had not been given heroin or morphia. He never used "dope" drugs, either before or after operation. Eleven of the patients had developed malignant disease elsewhere, including glands in the neck. Most of the recurrences were within the first year, showing the importance of Semon's instructions to patients to present themselves once monthly for the first year. In borderline cases, should there be recurrence, laryngectomy should be done. In subglottic cases, those in which the cord was fixed, the prognosis was unfavourable. Sir StClair considered that there should be no operative death in these cases unless something exceptional occurred. The operation left the patient with an adequate voice and no social disability, and in selected cases the cure should be lasting. He had in the past operated upon cases such as, with a larger experience, he would not attempt now. Of nine cases in which the cord was fixed, only four lived more than three years after operation. He alluded to the importance of a careful preparation of the patient. He was not insistent upon any particular form of anæsthesia; the operation could be done under local anæsthesia, and if a general anæsthetic was preferred, the patient should not be under it very deeply. No atropine, morphia, or similar drugs should on any account be used, but bromide or aspirin was permissible. He did not see any advantage in using cocaine beforehand, nor in plugging the larynx, nor in doing endoresections. There was still need to urge that these cases should be sent to the laryngologist at an earlier stage, for that was, naturally, the stage at which operation gave the best results.

The paper was discussed by the President, Prof. E. PORTMANN, Dr. J. B. PACKARD (Philadelphia), Mr. STUART-LOW, Mr. THACKER NEVILLE, Dr. CAVENAGH (Worcester) and Dr. J. S. FRASER. Sir STCLAIR THOMSON replied.

The meeting on June 1st was devoted to otology, and the chair was occupied by the President of the Otological Section, Dr. J. S. FRASER. Two papers were read on otosclerosis. The first was by Dr. A. LOWNDES YATES, and was entitled

A Working Hypothesis for Research in Otosclerosis.

In attempting to investigate the ætiology of chronic progressive deafness, he had concluded that it was necessary to follow two lines of work: to establish a system of quantitative testing of the hearing which could be expressed in graphic form, and the estimation in this way of the various forms of deafness. Hartmann's work proved that if otosclerosis affected the cochlear nerve there was a progressive increase in the power of hearing as one passed down the auditory scale, while the reverse was the case if the stapedio-vestibular junction was affected. Cases of clinical otosclerosis Dr. Yates considered to be those in which Bezold's triad symptom-complex was present, with a patent Eustachian tube and no demonstrable adhesive process in the middle ear or

of a former perforation of the membrane. He exhibited and demonstrated various graphs, and said there were, from the standpoint of audiography, three types of aural disease: (1) nerve or internal ear deafness; (2) otitis media with indrawn membrane and limitation of its movements by adhesion to promontory; (3) acute otitis media, subacute otitis media and otosclerosis, in which there was a progressively increasing departure from the graph.

Prof. OTTO MAYER (Vienna), the recipient of the Dalby Memorial Prize, spoke on

Pathology of Otosclerosis.

By means of a series of specimens he showed that in this disease the original bone of the labyrinth capsule became absorbed and bone-marrow was formed in which an excessive number of osteoblasts abounded. Thus there was formed new bone which was of imperfect character. The marrow spaces could be found occupied by large vessels. This new bone overgrew the oval window and the round window. The lesions in otosclerosis were multiple, and the multiple fibromata in other parts of the system must be regarded as manifestations of the same tendency. He had found present in these cases a synchondrosis, and also bony growths in the petrous bone, represented by exostosis on its posterior aspect. Among 50 cases of deaf-mutism which he had examined he found typical areas of otosclerosis in 20 per cent. In 15 out of 30 cases of otosclerosis he had found some mal-development of the inner ear, and anomalies of the cochlear frame-work. That otosclerosis was a hereditary disease was supported by the conditions found in the inner ear on pathological investigation. Indeed the disease affected the whole auditory apparatus, which showed a general tendency towards malformation. He felt convinced that the disease was not inflammatory; and was equally sure that it involved connective tissue and bone—was, indeed, a hyperplasia.

Dr. A. A. GRAY expressed his agreement with nearly everything Prof. Mayer said, and said his own view, based on a considerable study of the subject, was that the disease could only occur in a person who had a personal tendency or idiosyncracy towards the disease, though he did not think it was found to be hereditary in every case. In some instances bone was deposited in excess, while in others there was only absorption of bone. It was not only a disease of bone. He thought not only temporal bones should be investigated in inquiring further into this question, but also the brain.

Mr. G. J. JENKINS spoke of the supposed association of the disease with osteitis deformans, remarking that in the five cases of the latter disease which he had submitted to microscopical examination he had not found any of the bony changes which were characteristic of otosclerosis, from which he concluded that they were different diseases. He did not regard otosclerosis as atavistic; it was a progressive condition, and atavism was never progressive.

Mr. SOMERVILLE HASTINGS considered that Prof. Mayer's work on this subject was beyond all praise. He (the speaker) had seen cases of what he would describe clinically as middle-ear deafness change into typical otosclerosis. There was a tendency to conclude that because in the latter no active changes were detected, and no septic focus could be found in nose or nasopharynx, no such lesion had ever been present, the fact being that a process which was started by an inflammation might persist after the cause was removed.

Mr. JAMES ADAM (Glasgow) mentioned a family whose members had a formidable galaxy of diseases and disabilities, various suppurative conditions, atheromatous arteries, scoliosis, kyphosis of the spine, and fragilitas ossium.

Sir JAMES DUNDAS-GRANT expressed the hope that the diagnosis of otosclerosis would not be made rashly, as it was regarded by many as almost the equivalent of a death-warrant. He had, however, seen the condition become stationary in some, while a few got somewhat better. He favoured supplying patients with a Pollitzerizing apparatus for self-use with a chloroform vapour.

The PRESIDENT showed a series of microscopical slides from cases of otosclerosis, under high magnification, to support his contention that it was a chronic inflammatory affection. He carefully indicated the areas in which, he submitted, the bone was inflamed.

Prof. MAYER and Dr. YATES replied.

Dr. HAROLD KISCH demonstrated by slides and described a method employed by him in grafting with temporal muscle after the radical mastoid operation had left a large open cavity. The use of this muscle enabled the graft to remain attached to its parent until it grew in the new situation.

Dr. DOUGLAS GUTHRIE described a method of fat-grafting in mastoid surgery, which he used for children under 8 years of age. The results were very encouraging, for he had 23 cases of healing by first intention out of 28 cases last year.

Many members discussed these two communications, and Friday afternoon was devoted to the inspection of 16 clinical cases.

The Saturday morning session on Otology, with Dr. FRASER in the chair, was opened by Prof. G. PORTMANN (Bordeaux), who read a paper on

Vasomotor Affections of the Internal Ear.

Vasomotor disturbances, he said, could be regarded as some of the most important and pathognomonic elements in internal ear affections; they depended directly on the sympathetic system. Recently, in association with colleagues, he had experimented on the action of the sympathetic in reference to the labyrinth, the experiments consisting of either pericarotid sympathectomy or the injection of vasomotor drugs, and compression of vertebral and common carotid arteries, and the warm bath test. For a long time otologists had been impressed by the action of the sympathetic on the labyrinthine circulation on the one hand, and on the other by the secretion of the endolymphatic fluid. Having observed a typical angiospasm of the anterior labyrinth in a patient with Reynaud's disease, Lermoyez had drawn attention to the similar structure of the two situations (the digital and the labyrinthine) and summed up a particular labyrinthine affection as "the vertigo which makes one hear"; it appeared to be a spasm of the internal auditory artery. Prof. Portmann submitted the following comparative table of the two conditions:—

Ménière's Disease.	*Lermoyez's Syndrome.*
Good hearing.	Good hearing.
Sudden vertigo.	Gradual deafness.
Sudden and decreasing deafness.	Sudden vertigo.
Slow recovery.	Quick return of hearing.

Angiospasm could well explain the onset of vertigo and the disappearance of the deafness, both depending on the removal of the barrier of the labyrinthine artery. The pathogeny of Ménière's disease was still debatable; Ménière's own view was that it was caused by intra-labyrinthine hæmorrhage, while all who had tried to solve it gave an important place in causation to vasomotor troubles. Many facts pointed to vertigo being essentially a phenomenon of irritation; vertigo disappeared with destruction of the labyrinth, and irritation of the internal membranous ear or of the vestibular nerve was required to produce a giddy sensation. A strident noise by irritating the original filaments of the cochlear nerve might also cause vertigo reflexly through vaso-dilatation. How, Prof. Portmann asked, was this irritation of the vestibular nerve produced? No satisfactory answer could yet be to this question, but whatever the mechanism Ménière's disease was closely connected with vasomotor phenomena and therefore with the sympathetic equilibrium. Vertigo was produced by the sudden

aso-dilatation following the spasm in the syndrome f Lermoyez, but that which accompanied ischæmia f the labyrinth disappeared on sympathectomy, ie consequence of which was a vaso-dilatation of ie labyrinth. Deafness seemed to accompany chæmia of the anterior labyrinth by vaso-constriction. 'he angiospasmodic syndrome of the labyrinth ncluded tinnitus, deafness, vestibular hyperexcitaility, and sympathetic hypertony. The causes of ago-sympathetic troubles were very diverse, and ight be mechanical, endocranial, toxic, or plainly sychic. He attached great importance to the action n the regulating apparatus of the endocrine glands, specially the hormone of the suprarenal gland.

The paper was fully discussed.

Dr. SALISBURY SHARPE contributed a paper ntitled

The Influenza Ear.

The burden of the paper consisted of a plea for arly myringotomy for bulging due to influenza, nstead of waiting for the swelling to burst in the rdinary course, with resultant dissemination of he toxic material, and possible secondary infection. Hæmorrhagic myringitis he considered to be pathognomonic of influenza as the causal agent.

Mr. G. J. JENKINS said that influenza was nswerable for some of the mildest as well as for some f the most disastrous affections of the ear.

Mr. RITCHIE ROGDER agreed as to the great ariability of otitic symptoms met with in influenza pidemics.

Mr. HERBERT TILLEY drew attention to the mportance of using an exhaust speculum after incising he membrane, so as to reduce the possibility of eaving pus in the drum.

The remainder of the morning was occupied with he discussion of clinical cases.

On Friday members of the Sections dined together.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.

AT a meeting of this Society held at Leeds on April 27th, Mr. H. LEITH MURRAY (Liverpool), the President, took the chair, and a paper on the

Value of Drainage in Wertheim's Hysterectomy

was read by Prof. FLETCHER SHAW (Manchester). Until recently, he said, his mortality from this operation had been 20 per cent., and even a mortality of 12 per cent. which Victor Bonney had had in his second series placed a dreadful responsibility on the surgeon, especially as so many of the patients who did recover had a very painful and prolonged convalescence. He had tried every suggestion for combating shock, sepsis, and urinary sepsis without much improvement until he found that Prof. Paul Werner in Wertheim's old clinic in Vienna still drained the pelvis by a small wick of gauze running down into the vagina. In the early days this had been the universal practice, but Prof. Shaw had ceased to do it after the first few years because several patients developed ureteral fistulæ, owing probably to the fact that a much larger quantity of gauze was left in the pelvis than was left by Prof. Werner. Since his visit to Vienna he had had the opportunity of doing this operation upon nine patients, all of whom had recovered. A small series like this did not allow of dogmatism, but what struck him much more than the want of fatalities was the straightforward, easy convalescence of most of the patients; though the series was small, he felt he should bring his experience before the other members of the Society, as he felt he had gained more improvement from this small step than any other which had been suggested.

Prof. CARLTON OLDFIELD (Leeds) said that 20 years ago he had employed the gauze pelvic drain. He had, however, discontinued its use, and his results were better than formerly.

Prof. MILES PHILLIPS (Sheffield) did not use the gauze drain. He considered that the most important factor in success following the operation was absolute hæmostasis.

Mr. J. W. BURNS (Liverpool) described a case of

Imperforate Anus.

The patient was aged 31 years and had had three normal labours. She complained of "the womb coming down, and much discomfort on walking." On inspecting the vulva and perineum it was seen that except that there was a small area of pigmentation the anus was absent. The vulva including the fourchette appeared normal. About one inch inside the vagina on the posterior wall a transverse slit with crenated edges was seen which opened directly into the rectum. Above this slit there was a well-marked septum which separated the vagina from the rectum. On bimanual examination the uterus was felt to be slightly enlarged, retroverted and freely mobile. Tubes and ovaries were normal. The coccyx was missing and the sacrum seemed to be deficient. The tissue between the vaginal orifice and the pigmented area referred to above felt very thin. On straining the uterus and bladder came right outside the vulva. In spite of this condition the patient definitely stated that except on one occasion, when she was in the maternity hospital and had been given aperients, she had never experienced any discomfort arising from loss of control over the bowels.

The case presented a distinct problem as to the best line of treatment to adopt so as to cure the procidentia and, if possible, provide a degree of sphincteric control over the rectum. Anterior colporrhaphy was carried out and the bladder pushed up. The cervix was amputated by removing a large cone of tissue and the raw area thus made covered in by vaginal flaps. Next the lower two inches of the rectum were dissected free and a new anus provided in the middle of the pigmentation on the skin. The free end of the bowel was drawn backwards through this anus and united to the skin margins by interrupted catgut sutures. The perineum was then constituted by bringing the lateral tissues together in the midline as is done in the ordinary perineorrhaphy. At the end of three weeks, when the vaginal wounds had healed, the abdomen was opened, the uterus ventrofixed, and both tubes cut across, ligatured and arranged so that the cut ends of each tube were separated by the corresponding round ligament.

The patient, said Mr. Burns, made a very good recovery from both operations and left the hospital in excellent condition. She had very good control over the bowel and could retain a simple enema. It was somewhat difficult to understand how this control over the bowel had come about. The tissues with which the new perineum was constituted could not have contained much active muscle tissue, and he presumed that the original sphincter ani must have been either absent altogether or else atrophied out of existence. The pulling backwards of the bowel might have kinked it so much that abdominal pressure was required to overcome the obstruction and so a certain amount of control was acquired indirectly.

Mr. ALFRED GOUGH (Leeds) described a

Case of Placenta Accreta.

He was asked to see the patient, a primipara aged 26, on account of delay in the second stage of labour. The child was easily delivered with forceps. It was then noticed that there was absolutely no loss of blood, and only after three hours appeared a slightly blood-stained discharge. There was no descent of the umbilical cord. After-pains occurred, but the uterus did not contract as usual into a hard round ball. Pituitrin and ergotin were given, and attempts were repeatedly made to express the placenta, but without success.

It happened that he had recently heard of two disasters following the removal of very adherent placentas—one patient dying immediately from shock and hæmorrhage, the other a few days later of septicæmia—so he decided to leave the placenta in the uterus and to await events. The cord hanging from the vulva was kept dusted with boric powder. He remained within call for 12 hours.

Next day there was no change. The temperature was normal. Crédé's method was again tried without success. On the third day the temperature was 100° F. but the patient's condition was otherwise satisfactory. Attempts to express the placenta again failed. On the fourth day the temperature had risen to 102·8°, and there was general malaise. The lochia were of average amount and not offensive. It was then decided to empty the uterus. Under ether anæsthesia, the placenta was found to be adherent in one or two places and it was readily removed. The uterine

cavity was washed out with copious irrigations of a 1 in 300 solution of lysol. The temperature rose to 103·5°, but next day had fallen to normal and the patient made a good recovery. Soon afterwards, however, signs of pulmonary tuberculosis appeared and she spent some months in a sanatorium.

It might be questioned, said Mr. Gough, whether this was really a case of placenta accreta. It was clearly a morbidly adherent placenta, but perhaps not one of the most adherent. Generally, the diagnosis of placenta accreta had been made after an unsuccessful attempt at its manual removal.

What was the proper course when the placenta could not be delivered in the usual way? Most English text-books said that it must be removed manually after a certain time—one or two hours. Any important post-partum hæmorrhage was, of course, an indication for the immediate emptying of the uterus. In this case, with no loss of blood for three hours and then only a minimal loss, the safer course was the one adopted. The forcible scraping away of the placenta in fragments entailed a grave risk of perforation of the uterus, shock, and hæmorrhage, and the later development of septic complications. A risk of leaving the placenta was, he supposed, that separation might take place and post-partum hæmorrhage occur when no help was at hand; but it seemed unlikely that a closely adherent placenta would suddenly become detached. This fear might have some weight in dealing with a patient in a remote country district, but in an institution it might be entirely disregarded. Then there was the risk of sepsis being favoured by the retention; it had occurred in this case, but was evidently of the sapræmic type.

Mr. J. E. STACEY(Sheffield) described a specimen of bilateral tarry ovarian cysts; the PRESIDENT and Mr. A. A. GEMMELL (Liverpool) reported a case of uterine sarcoma which ruptured and caused acute symptoms in the abdomen; and Mr. W. GOUGH (Leeds) read notes on parovarian and ovarian cysts removed during pregnancy.

EDINBURGH OBSTETRICAL SOCIETY.

AT a meeeting of this Society held on May 9th, Dr. HAIG FERGUSON, the President, took the chair, and a paper on

Maternal Mortality from Puerperal Sepsis

was read by Dr. JAMES YOUNG. He said that the total mortality in these islands was about 4000 yearly; between 1911 and 1926 inclusive there had been 66,421 deaths in England and Wales. The most important single cause was sepsis. For 1926 the total maternal mortality-rate in England and Wales was 5·14, and the sepsis rate 1·60, per 1000 live births. The causes of puerperal sepsis might be clinically considered as: (1) *Contagion*—namely, contact infection with a virulent microbe introduced from without, in which the phenomena were similar to those present in other infective diseases, for example, tetanus, erysipelas. (2) *Trauma*. Here the wound was the primary factor and overshadowed in importance the source and nature of the microbes, which belonged to the widespread micro-organisms capable of causing wound infection. (3) *Auto-infection*. Here the microbes were present in the genital canal before labour or they reached it from some distant source, for example, bowel, teeth, or tonsils. The essential distinction between these three clinical types was not undermined by the fact that in some cases two of the factors might be operating together.

Auto-infection, said Dr. Young, had sometimes been advanced as an explanation of the persisting high death-rate from sepsis in modern times, despite the application of the aseptic principle. That it probably played a minor rôle was, however, suggested by an analysis of the records of large maternity practices. In the Edinburgh Maternity Hospital about a century ago and in other large hospitals—e.g., Dublin—puerperal fever was negligible cause of death when contagion was obviously in abeyance; then years might pass without a death from sepsis. There was similar evidence in extensive modern practices. Thus in the extern practice of the Edinburgh Maternity Hospital there had been 500 successive, spontaneous, normal deliveries with 2 deaths from sepsis; there had been 888 cases in the extern practice of the Birmingham General Hospital with no deaths; whilst there had been 47,593 deliveries in the unselected practice of the East End Maternity Hospital in London with 5 deaths from sepsis, or 1 in about 9500. During 1927, in the practice of the Queen Victoria's Jubilee Institute midwives, there had been 53,502 deliveries with 6 deaths in normal spontaneous births, or about 1 in 8900. On including in this record all the deaths which could directly or indirectly be attributed to sepsis, the maximal figure, including normal and abnormal cases, was seen to be less than 0·5 per 1000. The conclusion was that the very small septic death-rate in these large bodies of women, who could not be regarded as selected from this standpoint, was an argument against self-infection, operating alone, being a appreciable component of the death-rate in the rest of the community. Dr. Young discussed the result of recent bacteriological research, which he said supported this view. The records of the old hospital showed that contagion was the dominating cause of the deaths from sepsis. Instrumentation was the rare—the forceps rate in the Edinburgh Maternity Hospital a century ago was 1 in 472 cases (Simpson)—and trauma was negligible as a cause of sepsis. In the Queen Victoria's Jubilee Institute midwives' practice could be taken as typical of midwives' practice nowadays, contagion (as judged from the incidence of normal cases dying from sepsis) was a negligible cause of death in over 50 per cent. of the midwifery of England and Wales which was in the hands of midwives. He quoted these figures merely because they were the only large records available and not because they necessarily demonstrated any superiority, qua simple contagion, of the midwives over the doctors' practice. He did not think there was any evidence that this was so. Contact infection of the normal by the abnormal and infected case was a risk in modern maternity hospitals, and it was difficult to exclude completely. In Dr. Young's opinion, trauma due to instrumentation was probably the main cause of the present septic death-rate. On analysing the factors at the back of the great increased instrumentation of modern times, he concluded that it was unwarrantable to consider that this was entirely or even largely attributable to malpractice. That with satisfactory antenatal care and an efficient maternity service, the maternal mortality could at once be lowered was, however, supported by the record of the East End Maternity Hospital, London, where during four years in 900 cases the total maternal mortality had been reduced to 0·67 per 1000. Here the instrumental rate was between 2 and 3 per cent.

Dr. Young's conclusions were as follows:—

(1) Autogenous infection is a minor primary cause of fatal puerperal sepsis.

(2) Contagion is probably of comparatively secondary importance. The well-established risks of contact infection in hospitals call for care in the extension of the hospital system of maternity service.

(3) There is evidence that trauma is the most important cause of the death-rate from sepsis. This is not entirely a problem involving the medical attendant; it has implications of a wider nature.

(4) The immediate need is an improved machinery for maternity practice based on a midwife-doctor combination. From the standpoint of immediate policy the importance of this overshadows all other considerations—e.g., "research"—and there is reason for the hope that by this means also a lessening of the death-rate is possible.

(5) Improved education of the public, midwife, and medical student and the assistance of the central and local authorities are all necessary for the creation and working of a satisfactory machine.

Discussion.

Dr. WILLIAM FORDYCE said that the question of segregation of confinement cases in hospitals was important, and he wondered if it was really a good thing for normal cases to be confined in hospitals where there was only a limited amount of space. He thought that forceps delivery in selected cases prevented the trauma that might otherwise be caused by long-delayed labour. He regarded the statistics of puerperal sepsis of 100 years ago as not very reliable.

Prof. JAMES HENDRY quoted three cases of pyrexia of extraneous origin—i.e., from an infective rhinitis, a commencing whitlow, and a septic wound on the skin of the patient's husband—to show the importance which contagion might have. He advocated separate accommodation in maternity hospitals for cases sent in after interference outside.

Dr. DOUGLAS MILLER quoted from statistics of the Royal Maternity Hospital, showing that the incidence of pyrexia in cases delivered instrumentally was much larger than in those whose delivery had been spontaneous. He had found a marked variation in the bactericidal power of the blood in pregnant women, which might explain the variation in individual susceptibility to infection.

Dr. J. M. BOWIE thought the whole machinery of maternity service in this country needed overhauling. This reorganisation might be done in two ways: (1) by the present system of trained midwives working alone in normal cases and assisted by doctors in difficult cases; or (2) a new race of specialists might arise which would devote itself exclusively to midwifery.

Dr. KEPPIE PATERSON attributed great value to prolonged antiseptic douching after delivery even in normal cases, but believed it to be of greater value after manipulative interference.

The PRESIDENT thought that hæmolytic streptococci might be rendered temporarily inert by normal vaginal secretion, but under certain circumstances they might regain their hæmolytic action. He also urged the segregation of complicated cases, but for this a large hospital was required. Trauma was not due only to instrumental interference, as normal labours were often associated with very severe trauma.

Dr. C. W. SOMERVILLE described three confinements complicated respectively by measles, encephalitis lethargica, and diabetes.

Dr. CHARTERIS GRAHAM described ten cases of Cæsarean section performed by himself.

Reviews and Notices of Books.

GYNÆCOLOGY.

By HOWARD A. KELLY, A.B., M.D., L.L.D., and Collaborators. London and New York: D. Appleton and Company. 1928. Pp. 1043. £2 10*s*.

MOST British gynæcologists probably cherish the hope of one day visiting the clinics of the United States and Canada, but for those who find the ideal difficult or impossible to realise we can conceive no better substitute than a careful study of this volume by Howard Kelly and 22 collaborators, each specially expert in the subject with which he deals. This is not a text-book in the ordinary sense of the word; the author would probably say that it is not meant to be. The junior student will not usually find here sufficient pathology to enable him to understand the clinical features of gynæcological diseases; the book is essentially one for the more advanced man who has already acquired a good acquaintance with gynæcological pathology. Out of 49 chapters 18 are from the pen of Kelly himself, and these are amongst the most valuable, recording, as they do, the results of a lifetime of unique experience in gynæcological work. A number of contributions deal with special symptoms in gynæcology and with borderline conditions. For example, there is a good chapter on backache by Robert W. Johnson, one on pneumoperitoneal pontgenography by Rueben Peterson, and a most useful one on psychiatry and mental hygiene by Esther Loring Richards. Ureteral stricture as a possible cause of almost every symptom met with in gynæcological practice is fully discussed by Guy L. Hunner; this condition, it appears, is found in about 12 per cent. of autopsies. Amongst the symptoms it may induce are backache, pelvic pain, pain in the hips and down the thighs, bladder irritability, urinary incontinence, headaches, ovarian neuralgia, dysmenorrhœa, dyspareunia, and menorrhagia; the occurrence of the last symptom is explained by damage to renal function and consequent uræmia. After this terrifying list it is good to learn that stricture can easily be dealt with by ureteral dilatation.

In their attitude to "endometritis" American gynæcologists seem to be even more advanced than ourselves, for as a pathological entity it has almost completely disappeared. Gonorrhœa is described as the typical infection of the female genitalia, but the gonococcus, though it gains entrance to the tubes through the uterine cavity, rarely leaves any significant changes there; even in bilateral pyosalpinx and cervicitis the corpus uteri usually remains normal. The explanation "probably lies in the periodic regeneration of the endometrium." A gonorrhœal endometritis, however, may occur with a lowered resistance as after injudicious instrumentation, a miscarriage, intra-uterine polyps, or an overwhelming infection of the tubes or ovaries. The mucous membrane as well as the musculature of the uterus may be infected from abscesses burrowing into the uterine wall; though the writer (Lawrence R. Wharton) does not say so, we presume that in these cases the mucosal infection never becomes chronic. Few readers in this country will be inclined to disapprove of this iconoclastic attitude towards endometritis as a pathological conception; inflammation of the endometrium was always difficult to demonstrate, and certainly neither teacher, student, nor pathologist will regret the disappearance of the most confusing chapter in gynæcology. Apparently "senile endometritis" has also been discarded; yet in the endometrium after the menopause there is no periodic regeneration. Nor is there any reference to the condition recognised in this country as chronic metritis or subinvolution, with its associated changes in the elastic tissue. Perhaps this is included under the term "myopathic hæmorrhages," though no explanation is given as to what these hæmorrhages are. A clear account of the distinction between the old and the newer teaching would be appreciated by the student-reader, who may be puzzled by a classification quite unfamiliar to him. The chapter on peri-uterine tubal insufflation by I. C. Rubin is especially good, though it is doubtful whether tubal insufflation will ever be practised in this country, as it is in America, as an office procedure occupying five to ten minutes. Endometriomata (Chap. 39) are dealt with by R. M. Lewis, who gives an excellent account of the work of J. A. Sampson, but the reader may well wonder why the subject is discussed also in Chapter 32 under the title of "adenomyoma." The section on menstruation by Emil Novak is adequate yet succinct; it is disappointing to find no reference to the hygiene of menstruation. Why is Fallopian spelt "fallopian" throughout the book, whilst the capitals are retained in Morgagni, Gärtner, Sims, Emmett, Kelly, and Novak?

This book does credit to the editor and his school, and may be warmly recommended to the advanced student and to those who wish to keep in touch with the trend of American gynæcological opinion.

BACTERIOLOGY.

A Text-book of Bacteriology and its Applications. By CURTIS M. HILLIARD, Professor of Biology and Health, Simmons College. Boston: Ginn and Co. Pp. 329. $2.80.

An Elementary Laboratory Guide in General Bacteriology. By HAROLD J. CONN, Soil Bacteriologist, New York Agricultural Experimental Station. London: Baillière, Tindall and Cox. 1928. Pp. 165. 13*s.* 6*d.*

GRADUALLY it is becoming recognised that bacteriology, while it may yield results of use in medicine, chemistry, industry, agriculture, and other activities, is a separate science, worth cultivating for its own sake. Books purporting to deal mainly with one of its branches should have their scope indicated in their titles, whereas a text-book of bacteriology should survey all its developments impartially. Prof. Hilliard has provided an excellent example of the general text-book. It is concise, nearly always accurate, and covers the whole field, but without dealing exhaustively with any one branch. Perhaps most attention is devoted to the bacteriology of foods such as milk, milk products, canning and other food preservation processes, shell-fish, &c. The bacteriology of water is also discussed in some detail, while there is a short but clear account of soil bacteriology and its economic importance. The more purely medical aspects only occupy four of the 21 chapters, and this account would be of very little use to the medical student. It does serve, however, to provide the general student with a brief outline of the relationships of bacteria to disease. These sections contain a few doubtful or inaccurate statements. For example, it is stated that the chief source of tubercle bacilli in milk is manure flakes and that an infected udder is a rare source of infection; that food poisoning is largely due to bacteria which can live saprophytically (this is only true of botulism); and that diarrhœal diseases in babies are caused by massive numbers of bacteria in milk regardless of their varieties or sources. For the most part, however, the teaching is orthodox and modern. A good many directions for practical work are included, although the book would not serve as a laboratory text-book. The volume can be recommended as a clear, comprehensive, and not too detailed general account of bacteriology.

If text-books on general bacteriology are rare laboratory manuals suitable for the student of all branches are still rarer. In many ways Mr. Conn's book is a model of its kind. It deals only with the elements of practical bacteriology, but it deals with them in a highly competent manner. The student, no matter whether of medical, agricultural, or commercial bacteriology, who has worked through the brief course outlined in its pages should by so doing have become possessed of a very sound knowledge of the ground work and should be able to select his further activities with discretion.

NOTABLE BRITISH TRIALS.

Trial of S. H. Dougal. Edited by F. TENNYSON JESSE. London and Edinburgh: William Hodge and Co. 1928. Pp. 236. 10*s.* 6*d.*

MANY of the "Notable British Trials" have turned mainly upon medical evidence. The Moat Farm murder was not one of them. Dougal, found guilty of that crime in 1903, had served in the ranks of the Royal Engineers for over 21 years and earned a "very good" discharge. While stationed in Canada he lost two wives in quick succession; both died after sudden illness and in great pain, and it is difficult, in view of his subsequent history, to resist the suspicion of poisoning. If the accusation were true, it is odd that he finally resorted to the bullet to dispose of Camille Holland, the little elderly lady whom he had persuaded to come and live with him at the Moat Farm, near Clavering, in Essex. Before this happened he had married a third wife in Dublin, not to mention other less regular unions. He had also been convicted, after leaving the army, of an ingenious cheque forgery which cost him a year's hard labour and the loss of his pension. Coming out of prison penniless, he somehow made the acquaintance of Miss Holland, a woman of strong religious feelings, good up-bringing and education, and possessing a fortune of £7000. Three weeks after they had established themselves with her money at the Moat Farm she disappeared. Four years later her body was found, with a bullet in the skull, in a ditch which Dougal had been filling in at the time. Meanwhile, Dougal, though he had explained her disappearance by saying that he had seen her off to London by train, had written to her bank, in her name, from the Moat Farm address, had drawn all her money on forged cheques, and had sold all her investments. He sent for his wife to join him, at first passing her off as his daughter. She presently ran away with a farm labourer, but Dougal was never at a loss in finding feminine companionship. Divorce proceedings in 1902 brought publicity, and early in 1903 the police became busy. Dougal was arrested on a charge of forgery and, after weeks of weary digging in the moat, Camille Holland's body was found. Mr. A. J. Pepper, the surgeon called by the Crown, gave evidence that the wound could not have been self-inflicted. Though the case was clear, the judge's summing-up seems brief in these days when judges must remember the Court of Criminal Appeal. Dougal's counsel dared not put him in the witness-box and, oddly enough, the judge, the late Mr. Justice R. S. Wright, did not comment on the fact. Miss Tennyson Jesse, who has skilfully edited the account of the trial, brings out the fact that Dougal was certified insane after the forgery conviction in 1896, and served the whole of his sentence in Cane Hill Lunatic Asylum. Insanity, however, was of course no part of the defence at the trial.

JOURNALS.

MEDICAL JOURNAL AND RECORD.—The issue of this newspaper for April 18th contains an instalment of an interesting symposium on neuro-psychiatry from a group of well-known American physicians. We may note in particular a genetic study of mongolism by Dr. Ira S. Wile and S. Z. Orgel, in which the conflicting views of various authorities are set out, but only to find that the theories studied were inadequate to explain the phenomena. Another article in the same issue is a sketch of the Royal Society of Medicine, giving a short account of its origin as the Medical and Chirurgical Society and its development into an Academy of Medicine in all but name. The article is well illustrated, but contains certain obvious misprints, inasmuch as the roll of the Society is said to show 371 honorary Fellows, 24 Associates, 426 corresponding members, and 480 members. The correct figures should be according to the latest roll of the Society 38 honorary Fellows, 3749 Fellows, 40 Associates, 157 corresponding members, and 450 members. Also the incorporation of the ophthalmological library with the main library has escaped the attention of the writer, who, however, does justice to the library as the most comprehensive medical library in the Empire, and also as an admirable resort for medical authors who require facilities for intensive study, for bibliographic details and dates, and for references in general. In fact the writer puts up a strong plea in support of his frank suggestion that a transatlantic millionaire should, with a stroke of his pen, remove certain liabilities. We know that the Society has grave financial commitments, but the business-like way in which its affairs are now managed has proved that complete stability is on the way. None the less the cause of medicine, not only in this country but in the world, would be benefited if the pecuniary stress of the Society were relieved.

THE LANCET.

LONDON: SATURDAY, JUNE 9, 1928.

CLINICAL APPLICATIONS OF OVARIAN EXTRACT.

SINCE the dictum of HELMONT, "Propter solum rum mulier est quod est," our knowledge of arian function has progressed very far. It had long en known that castration in women is followed by ressive changes in the genital organs with atrophy the uterus, but the experiments of E. KNAUER owed that if the ovaries are removed from their ce and implanted elsewhere in the body atrophy the uterus does not occur. From this it was a ural step to make use of a subcutaneous injection ovarian extract. At first these attempts met with le success. Thus BUCURA in 1907 found that ections of "ovarin" into castrated animals was l followed by atrophy of the uterus, and he con-ded that its exhibition merely reduced to a certain ent the obesity which follows castration. The t important positive result was obtained by ADLER, who in 1912 showed that it was possible using crude watery extract of whole ovary to duce the typical signs of œstrus in animals. In E LANCET last week Prof. E. C. DODDS reviewed ne of the experimental findings; he traced the ious steps from KNAUER'S observations in 1900 il the preparation by E. HERRMANN and L. AENKEL of active oily extracts capable of producing trus in spayed rats. The story of this work and the standardisation by biological methods of the ive extract is familiar to our readers. Prof. DODDS nts out that oily extracts have certain disadvan-es for clinical purposes, and that many workers ve tried to obtain an active extract in watery ution. Recently he and his colleagues succeeded preparing, by an elaborate chemical process of ich he gives the outline, a clear watery solution of ubstance (or substances) possessing the property producing œstrus in rats in very high dilution. e preparation is without action on the blood ssure, it gives rise to no local reactions, and even given in large doses it seems to be non-poisonous he ordinary sense of the term. The œstrus-producing rmone is present in the liquor folliculi as well as in ier parts of the ovary, and also in the placenta. man placenta, being easily obtainable, has been d as the source of the extract. One kilogramme of sh placenta gives about 150 to 200 units, the unit ng the smallest dose required to produce œstrus 10 out of a series of 20 rats. It is hoped that this ter-soluble extract will shortly be available in antities suitable for clinical use.

Prof. DODDS approaches with considerable diffidence e question of the clinical applications of ovarian ract which produces œstrus in animals, this ques-n being bound up with the still uncertain relation menstruation to œstrus. A large amount of literature results of clinical trial is available, but most of deals with extracts that have not been standardised biological tests, and is therefore of little scientific lue. There are many directions in which clinical ults might be expected to follow administration of arian extract in suitable doses. It is possible that ections may be of value in hastening the onset of menstruation in cases of delayed puberty. HERRMANN and FRAENKEL stated in 1918 that if their oily preparation were administered subcutaneously to prepuberal rabbits the onset of premature puberty was noted. If the onset of puberty was marked not only by the appearance of œstrus but also by ovulation, and therefore by full development of the genital organs (which can be shown externally in rats by canalisation of the solid vagina), a similar effect might reasonably be expected in the human female. Before the extract could assume clinical importance in this connexion the production of ovulation would be necessary, since it is difficult to see what advantage, unless it be a psychical one, could be derived from the mere establishment of an artificially induced menstruation without preceding or accompanying ovulation. That ovulation is not an essential antecedent to the production of œstrus is shown by the fact that œstrus is produced in spayed rats by mere injection of the hormone. Ovarian extract might, however, be of use in mitigating the discomforts of an artificial menopause after removal of both ovaries by operation, even though the uterus had been removed at the same time, and the resumption of menstruation could not be looked for; or again it might serve to lessen some of the unpleasant phenomena of the natural menopause or even to delay the onset of the climacteric in women who desired for any reason such an interference with the course of nature. There are certain cases of sterility which may be due to ovarian hypofunction resulting in the production of immature ova incapable of fertilisation. Some years ago A. ROBINSON[1] showed that in ferrets a large amount of sterility and even intra-uterine death might be due to the production of ova incapable of development. The injection of active ovarian extract might therefore be of value in certain selected cases of sterility by bringing about a fuller development of hypoplastic ovaries.

Experimental evidence on pregnant animals indicates that the hormone may have an important action in terminating pregnancy. If this is borne out by clinical trial, a certain and harmless means of inducing labour either at term or prematurely would be at our disposal, in place of the troublesome and sometimes dangerous methods at present in use. It has been found that the hormone will cause abortion if given in large doses to laboratory animals. Its mode of action is doubtful. It is probably correct to say that pro-œstrus, which is believed to correspond (at least in its earlier stages) to the premenstrual phase in women, is the result of a hormone (or hormones) derived from the developing Graafian follicle, and from the developing corpus luteum. If conception occurs and the fertilised ovum is implanted, the premenstrual decidua continues to change into the decidua of pregnancy. This further development may now be aided by additional hormone derived from the placenta and possibly from the fœtus (STARLING and LANE-CLAYPON). It may be that there is a nice regulation of this hormone so that hyperæmia of the developing decidua is never excessive, and is so adjusted that it causes the maximum decidual reaction without being sufficiently intense to lead to transudation of blood into the stroma, from rupture of vessels or otherwise, which might give rise to detachment of the ovum. If extra hormone is supplied by subcutaneous injection, it might well be excessive and lead in animals to abortion or premature labour. A difficulty arises, however, when we attempt to use this theory to explain

[1] THE LANCET, 1921, i., 1030.

abortion or premature labour in women. Menstruation in women may be looked on as a "menstrual abortion," and as analogous to abortion of a fertilised ovum or premature labour in that the entire decidua is cast off. But the modern view of the cause of menstruation is that it is mainly due to *degeneration* of the corpus luteum, and therefore to loss of the hormone derived from it and from the liquor folliculi, and that only a very small part of the hæmorrhage is derived from over-distended capillaries at the climax of the premenstrual phase. The cause of abortion or premature labour should, by analogy, be somewhat similar. Now, at least in the early stages of pregnancy, the corpus luteum is *not* degenerate, and the placenta is developing; from these two sources presumably the supply of hormone that leads to the production of the premenstrual and pregnancy decidua is constantly being maintained. On this showing, injection of the œstrus-producing hormone could do nothing more than accentuate the effects of the latter; there would be no reason why it should lead to abortion or premature labour.

It seems therefore doubtful whether the ovarian extract is capable of producing menstruation unless it does so by first causing ovulation; for example, menstruation might not result from its injection if the ovaries had been completely removed. On the other hand, it might, if given in sufficiently large doses, be capable of producing abortion and premature labour by causing uterine hyperæmia and consequent rupture of decidual vessels. The abortion so caused would not be comparable to a "menstrual abortion," as it would not have been produced by any degenerative process in the corpus luteum. It is conceivable that ovarian extract might assume not only therapeutic but also medico-legal importance, if in unscrupulous hands it could be used for the production of abortion. Regarding this possibility it is useless to speculate at the present stage. Prof. DODDS states that a watery extract will shortly be available in quantities for clinical trial, and the medical profession will watch with interest the results obtained from its use. Meanwhile it should be noted that abortion is usually easy to procure in laboratory animals, and notoriously difficult in the human female.

THE INHERITANCE OF BLOOD GROUPS.

SINCE the pioneer work of E. VON DUNGERN and L. HIRSCHFELD was published in 1910 the inheritance of the blood groups has been assumed to depend upon the existence of two dominants and two recessives. The dominants, usually described as A and B, correspond to the agglutinable factors or agglutinogens of the red cells, whilst the recessives, which are allelomorphic to the dominants, correspond to the agglutinins of the serum, and are known as *a* and *b*. In 1925 BERNSTEIN [1] on mathematical grounds, came to the conclusion that distribution of the groups in the general population could not be explained upon DUNGERN and HIRSCHFELD'S theory, but required the postulation of three multiple allelomorphs, two dominant and one recessive. Accepting the existence of the original dominants A and B, he replaced the two allelomorphs, *a* and *b*, by a single recessive which he called R, but which has since become known as O, because it merely signifies the absence of both A and B. According to BERNSTEIN'S hypothesis the agglutinins do not come under hereditary control at all, and the genetic formula of the four groups is as follows: Group 1 (Moss), AB; Group 2, AA or AO; Group 3, BB or BO; Group 4 (Moss), O. Should this prove correct it must considerably modify our views upon inheritance of the groups. From the theory of DUNGERN and HIRSCHFELD it followed that in any mating involving the presence of both the A and B factors in one or both parents, the children might be of any group. But BERNSTEIN, whilst agreeing that in all matings not involving a parent of Group 1 (AB) the groups of the offspring will occur according to the older hypothesis, believes that those involving a parent of the genetic constitution AB cannot produce offspring having the recessive O. In other words, a parent of Group 1 (Moss) cannot have a child of Group 4 (Moss). It further follows that matings between parents of the genetic formulæ O and AB can never result in offspring of the formula O or AB.

Individuals of the genetic constitution AB—i.e., of Group 1—are rare in the Western world, and it has been difficult to collect enough matings involving parents of this group to test the truth of BERNSTEIN'S views. Up to 1925 84 examples of such matings, resulting in 239 offspring, had been recorded, and the results were tabulated by SNYDER,[2] who found that in 34 out of the 239 cases the groups of the offspring did not fit in with the new theory. At first sight it might seem that so large a proportion (13 per cent.) of exceptions to the rule must prove fatal to BERNSTEIN'S hypothesis. SNYDER, however, himself examined nine matings involving parents of Group 1 and found no exceptions, and examination of the protocols in a certain number of the instances in which Group 4 children were said to issue from matings involving Group 1 parents discloses the fact that the child's group was reported within the first few months of life solely on the evidence of the agglutination of the red cells by known sera of Groups 2 and 3, and without taking into consideration the agglutinins of the serum. HAPP [3] has shown that the agglutinable factors of the red cells may not appear until the second year of life, and DYKE has recently demonstrated in our own columns [4] that a possibility of error is inherent in the use of grouping sera of insufficiently high titre; so it is more than probable that a great many of the offspring reported as belonging to Group 4 (Moss) actually belonged to some other group, and therefore constituted no exceptions to the rule. At any rate it is obvious that in so far as it bears upon this question, almost all the work performed upon the blood of newly born children must be left out of account.

Very strong support for the Bernstein hypothesis has lately been offered by Prof. OLUF THOMSEN [5] in a report to the Société de Biologie of Paris. Prof. THOMSEN has collected data concerning the groups of the offspring in 165 marriages involving members of Group 1, and with one exception—in which there were excellent grounds for disputing paternity—his results conform completely with those which BERNSTEIN would have expected. There is very strong reason to believe that his hypothesis is correct, and if it proves to be so, it will serve as a monument to the value of the deductive method and to the propriety of bringing mathematics to bear on biological problems. Prof. THOMSEN'S laborious investigation, the most important contribution so far on the inductive side, will go a long way towards

[1] F. Bernstein: Zeit. f. indukt. Abstammungs- und Vererbungsl., 1925, xxxvii., 237.

[2] L. H. Snyder: Amer. Jour. Phys. Anthrop., 1926, ix., 233.

[3] Happ, W. M.: Jour. Exper. Med., 1920, xxxi., 313.

[4] S. C. Dyke: THE LANCET, 1927, ii., 910.

[5] Oluf Thomsen: Compt. rend. de la Soc. de Biol., 1928, xcvii., 1270.

stablishing the theory on a firm basis. The narrowng of the possibilities of paternity in any given ase involving parents of Group 1 would, of course, e of great importance in legal medicine.

THE WELSH NATIONAL SCHOOL OF MEDICINE.

THE Welsh National School of Medicine is confronted with another crisis, one of the most serious n its turbulent history. Hitherto the students f the School of Medicine have received their clinical nstruction at the Cardiff Royal Infirmary, but the oard of management of the infirmary have given otice to the University College of South Wales and Monmouthshire to terminate this arrangement at he end of the month. It is true that the board has xpressed its readiness to enter into another agreeient which would enable the medical school to be arried on, but, it is understood, only under such onditions as would give practically complete control f the clinical school to the honorary staff of the nfirmary, a condition which the University is not ikely to accept. The trouble has been brewing for ome considerable time—indeed, since the very nstitution of a complete medical school—for the introuction of professorial units at the Royal Infirmary vas never welcomed by the honorary medical staff. Exactly a year ago the matter became acute when, vithout warning and at the end of the academic ear, the College authorities were suddenly faced vith the resignation from the office of clinical teacher f three senior surgeons of the infirmary staff. It vas urgently necessary to provide for the instruction f the students already attached to the school, and or those who proposed to join in October; moreover, he resignations would have diminished the beds in he charge of recognised teachers to a number so mall as to be incompatible with the continued ecognition of the clinical school by the University f London and the Conjoint Board. The College herefore agreed to the demands of the infirmary taff and admitted five staff representatives to eats on the faculty of medicine. Even this conession has not had the desired effect, and the position s now so serious that it is difficult to see a solution. t is clear from the reports in the local press that ersonal considerations are an acute element in the ituation. At the meeting of the board of manageient of the infirmary, as reported in the press, tatements were made for which there is little justifiation, and arguments were used which were, from very point of view, regrettable. But this kind of hing has happened before in the attempt to graft new organisation into an existing institution. With goodwill most difficulties can be smoothed away, nd it is to be hoped that Cardiff may yet prove self a worthy host of a complete national school of iedicine.

INCORPORATED ASSOCIATION OF HOSPITAL OFFICERS.—The fifth annual congress of this Association was held in London last week, under the chairmanship of the President, Sir Arthur Stanley. Mr. J. C. Stobart, the Director of Education to the British Broadcasting Corporation, discussing the use of wireless for hospital appeals, said that one of the London hospitals could in future expect an appeal every year as in the past. He thought that the preferable course would be that they should agree among themselves as to the priority of their claims in a given year. At the dinner which followed the congress Sir Arthur Stanley expressed his belief that the suggested compulsory insurance of motorists in the interests of the hospitals was quite impossible on the ground that if the motor insurance companies were compelled to take any and every risk, premiums would be greatly increased.

Annotations.

"Ne quid nimis."

THE BIRTHDAY HONOURS.

THE list of honours issued on the occasion of the King's birthday contains the name of Prof. J. S. Haldane, who has been created rightly a Companion of Honour. The members of the medical profession marked out for distinction are as follows: Lieut.-Colonel Sir William Thomas Prout, Senior Medical Advisor to the Colonial Office, is promoted to K.C.M.G., while knighthoods are conferred upon Dr. James A. Hosker and Dr. Thomas Watts, M.P., for political and public service. In the Order of the Bath, Colonel Harold Bolton, I.M.S., V.H.S., Assistant Director of Medical Services in the Deccan District, and Major-General Harold B. Fawcus, K.H.P., Deputy-Director-General, A.M.S., receive the C.B.; and in the Order of St. Michael and St. George, Dr. J. Hope Reford, lately Director of Medical and Sanitary Services in the Uganda Protectorate, becomes a Companion. Dr. Alfred Bakewell Howitt receives a C.V.O., and Khan Bahadur Ahmed Bakhsh, Assistant Residency Surgeon and Personal Assistant to the Administrative Medical Officer in Central India, a Companionship of the Imperial Service Order. In the Order of the British Empire, Colonel Howard Ensor, C.M.G., D.S.O., R.A.M.C., Deputy Director of Medical Services in the North China Command, Surgeon-Captain James H. Fergusson, R.N., Major John H. Hebb, R.A.M.C. (Retd.), Director of Medical Services Ministry of Pensions, and Dr. John E. Strathearn, Warden of the Hospital of the Order of St. John of Jerusalem in Palestine, receive the C.B.E.; Prof. Albert V. Bernard, M.O.H., Malta, Dr. J. G. Lyon Brown (for services in connexion with the emergency Volunteer Corps at Hankow), Dr. George R. Footner, Director of the Omdurman Civil Hospital, Major James H. Martin Frobisher, R.A.M.C., Surgeon-Commander Walter K. Hopkins, R.N. (Retd.), Medical Officer to the Board of Customs and Excise, Lieut.-Colonel Humphrey F. Humphreys, R.A.M.C.(T.A.), Surgeon-Commander Bryan Pickering Pick, R.N., and Major Gordon Wilson, R.A.M.C., become Officers of the Order. Dr. James F. Corson, Assistant Bacteriologist of the Medical and Sanitary Department, Tanganyika Territory, Dr. George Maclean, Sleeping Sickness Officer Tanganyika Territory, Dr. Yeshua Shami, M.O., Department of Health, Palestine, and Dr. E. H. Gillson, I.M.S., become Members of the Order. In the Order of the Indian Empire, Lieut.-Colonel Ernest W. C. Bradfield, I.M.S., Professor of Surgery at the Medical College and Superintendent of the General Hospital, Madras, Lieut.-Colonel Lewis Cook, I.M.S., Civil Surgeon Bhagalpur, Bihar and Orissa, Lieut.-Colonel John Cunningham, I.M.S., Director of the Pasteur Institute at Kasauli, Lieut.-Colonel George D. Franklin, I.M.S., late Chief M.O., Delhi, and Dr. Hugh G. Roberts, Welsh Mission at Shillong, Assam, receive Companionships. The following have been awarded the Kaisar-i-Hind Medal of the first class for public service in India—namely, Dr. R. J. Aston, Kachwa, United Provinces, Mr. C. F. Frimodt-Moller, Medical Superintendent of the Union Mission Tuberculosis Sanitorium, Madanapalle, Madras, and to Miss A. C. Smith, in charge of the Zenana Hospital of the Church of Scotland Mission, Guirat. Father Alphonse Fargeton, superintendent of the Rangoon Leper Asylum, has also been similarly honoured. In the name of the medical profession we offer congratulations to all these recipients of well-deserved honours.

THE REVIVAL OF THE VOLUNTARY HOSPITALS.

THE Voluntary Hospitals Commission has marked the conclusion of its labours by the issue of a final report which we summarise on a later page. This report is full of encouragement. Three years ago the accommodation in the voluntary institutions was short by 10,000 beds of what was required to provide a reasonable standard of adequacy, and a grant of public money towards new construction was regarded as the one obvious means of filling this huge gap. The national finances, however, were already heavily overburdened, and the grant was not forthcoming. Hospital administrators, thus put upon their mettle, thereupon determined to do for themselves what could not be done for them. The result of this determination, and of the energy with which it has been pursued, has been an expansion more rapid and more widespread than the Commission had anticipated. During the two years and a half between the middle of 1924 and the end of 1926 the rate of expansion has considerably exceeded the provision required to keep pace with the growth of the population. According to the judgment of a Commission, composed mainly of men of wide experience of hospitals, either as medical men or administrators, the proper ratio of beds to population is 1·6 per 1000, and on this basis it was necessary to provide in the two years and a half 1020 beds to meet the increase of population. The efforts of the 30 months actually provided not very far short of four times that number of beds—3829, or 2809 more than were required to meet the growing demand. The result is even better than the annual average of 1124 beds, the ratio of increase in 1926, the latest period for which figures are available, having been appreciably higher, while there is every reason to hope that the peak has not yet been reached.

As regards the finance of new construction the position is still more hopeful. In London the receipts for building purposes in 1925 and 1926 averaged more than double those of the three years, 1922–24. Figures for the provinces are not available—a circumstance which suggests once more the need for a bureau of hospital information—but the Commissioners have ground not only for believing that the amounts appropriated for building have substantially increased, but for expecting further improvement in the rate of progress. Our columns from week to week bear witness to the extent of current expansion, especially in the provinces. Simultaneously with the influx of money for building, maintenance income is likewise increasing. In 1925, which is now quite a long time ago, statistically speaking, the excess of income over expenditure was nearly three-quarters of a million, or over £100,000 more than in the previous year, notwithstanding that a substantially larger number of beds had to be maintained. Some of the most important hospital centres are, however, as yet unable to meet their expenditure. This is an especially serious state of things as concerns large general teaching hospitals. That they should be able not only to pay their way but to enlarge their opportunities is a matter of vital concern, since, as the report points out, failure to do so must "eventually react to the prejudice of the voluntary system," and, it may be added, to our whole system of medical education.

Finally, the retiring Commission faces the question: Whence are these institutions, not only the great teaching hospitals, but hospitals of all kinds, to obtain the accessions of income necessary to meet rapidly growing needs, to cope with the demands of widely increased circles of patients, and to lessen those long waiting-lists which cause so much dissatisfaction? Legacies are broken reeds; private contributions, generous as they are, are woefully insufficient, and the only hopeful source of future substantially increased income appears to the Commission to be the contributions of the industrial classes. Most of the hospitals which are keeping pace with demands that will never stand still draw revenue from "penny in the pound" or similar schemes. New schemes of the kind are constantly being started, not only in great centres of population such as Birmingham and Liverpool, to name the two most recent instances, but in districts which serve a large scattered population. So far as we are aware there have been no failures, and hitherto the hospitals have, generally speaking, avoided the obvious risk of creating in the minds of contributors expectations which might not always be fulfilled. That hospital finance must in the future be based, to a very large extent, upon mass contributions, is so obvious as to be on the way to becoming a truism. The report naturally has something to say upon the most urgent problem which at present confronts a serious proportion of our hospitals—the demands made upon them by the vast number of traffic casualties, most of which are the result of the madness of speed. The Commission favour "some system" of that compulsory insurance, which Sir Arthur Stanley has just dismissed as impossible, chiefly on the ground of the high premiums which would be required to safeguard insurance companies obliged to accept any and every risk. But the risks under a compulsory system would be exactly the same as at present, with the addition of provision for hospital treatment which would probably involve only a relatively small addition to the premiums. In any case we cannot much longer continue to cure tens of thousands of victims of road accidents at the expense of private benevolence or the pence of the working man.

QUALIFICATION AND AFTER.

AT the summer session of the General Medical Council which closed last week it was as usual the disciplinary measures which largely occupied the Council's time and exclusively the interest of the public; but the report of Committees which we now publish indicates that there are other aspects of the Council's work which deserve attention. We reproduce a chart appended to the report of the Finance Committee showing the number of medical students and practitioners on the British list from 1908 to 1927. This chart was prepared simply to give the Finance Committee some grounds for estimating the receipts from registration fees, which are the principal source of the Council's income. These receipts showed a decrease last year of more than £1400, owing to the diminishing entry to the medical profession; and the report declares that the number of practitioners is likely to decrease further for the next two or three years in consequence of the falling off of students which occurred in 1923 owing to the new regulations. This low-water mark in 1923 was a striking event to which attention was called in our columns at the time,[1] and a graph was drawn dealing with the figures for the preceding quarter of a century and the effect of war conditions upon them. It was then suggested that the diminution might have its root partly in economic conditions—possibly in a belief among parents that the medical profession was likely to be overcrowded and therefore not to present a fair prospect of livelihood. It was, however, evident that the surprisingly low figure of 1923 was in some degree an interregnum, for a certain number of students, who would no doubt under the old regulations have begun the study of chemistry and physics in October, only began their pre-registration work at this time and therefore remained unregistered until the following year. We may now assume that there were further factors at work in causing the diminution of 1923 other than the mere technical postponement of registration owing to the new regulations, for the level of medical student entry from 1924 to 1927 is seen to vary between the limits of 1050 and 1250, whereas in the decade 1900–10 the line remained fairly steady about the 1500 level. The Council's chart brings out another point of great interest, which is

[1] THE LANCET, 1924, i., 579.

the wastage of medical students owing to the fact that a certain proportion who register as students never proceed to their final qualification. This is ingeniously shown in the chart by drawing a curve of registered students who should have completed the six years curriculum, and superposing it on the actual qualification figures. During the years 1918–21 the difference in level between these two curves is very striking, indicating how many students of medicine omitted to complete the curriculum on their return from active service in the war, at any rate in the normal time. In 1923–24, however, the number of practitioner registrations was considerably in excess of those entering six years previously. This may have been due partly to the retarded qualification of men who would have been in the 1918–21 group of registered practitioners had they not been on active service, and partly to the advancement of some of the 1925 group, helped by the concessions and facilities for qualification in less than the regulation period offered to ex-Service students by the examining bodies. In 1925 there was actually a deficit of 1000 on the expected practitioner registration. These wide fluctuations due to post-war circumstances are not likely to be repeated, and the curves show a tendency again to resume their normal courses. In regard to wastage after qualification, the Medical Women's Federation has reacted to a statement, loosely made in some quarters, that 50 per cent. or thereabouts of women who qualify in medicine drop out of practice later owing to marriage, when it is presumed they cease from working at their profession. In order to test the accuracy of this statement the Federation has sent out a questionaire to a 1000 of its members living within the British Isles. Replies received in 95·5 per cent. of inquiries indicate that only 9 per cent. of the total number have dropped out of practice, the figure including a number who only retired after many years of active and successful practice. A further analysis is given in regard to the career of 644 medical women who qualified from metropolitan schools during the years 1923-25. Of these only 63 were known to have retired from practice, 62 of them (less than 10 per cent.) on marriage, whereas 41 others who married are known to be still working at their profession. It would be interesting to compare these figures with the wastage in the medical profession at large, but we do not know of any comparative figures on which conclusions could be based.

COURSES IN TUBERCULOSIS.

As already announced, the Joint Tuberculosis Council is arranging a series of post-graduate courses during the summer months, details of two of which have now been issued. At the Treloar Cripples' Hospital and College, Alton, Hants, the programme will extend from June 25th to 30th, the inaugural class meeting Sir Henry Gauvain, the medical superintendent, at 11 A.M., on Monday, the 25th. The subject-matter of lectures will include the organisation and staffing of a hospital for surgical tuberculosis, the diagnosis and treatment of tuberculous disease of the spine and hip, peritoneum and glands, as well as instruction in the technique of heliotherapy, plaster-making and aspiration of abscesses. Dr. R. G. Bannerman will deal with light treatment from the bacteriological standpoint, Dr. W. S. Duke-Elder with tuberculous disease of the eye, and Dr. J. E. Wood with light treatment in pulmonary and non-pulmonary tuberculosis of adults at King George's Sanatorium, Bramshott. On Saturday a visit will be paid to Sandy Point, Hayling Island, where sea-bathing is used as a therapeutic measure. At Cambridge, by arrangement with Dr. P. C. Varrier-Jones, a programme has been arranged from July 2nd to 7th, to be opened with an inaugural address by Sir Humphrey Rolleston on the Monday afternoon. Lectures during the next three days will include The Mental Factor in Tuberculosis by Dr. J. T. MacCurdy, Demonstration of Parasites by Prof. G. H. F. Nuttall, Chemotherapy and the Tubercle Bacillus by Prof. W. E. Dixon, a demonstration by Prof. J. B. Buxton, and lectures by Dr. W. Paton Philip and Dr. Louis Cobbett. On Friday there will be an all-day visit to the Papworth Village Settlement, and on Saturday morning a demonstration by Prof. H. Roy Dean, on the Anatomical and Microscopical Changes present in Tuberculosis. In the case of both these courses no fee will be charged for the lectures or demonstrations, and the Minister of Health has been asked to allow expenses to rank for grant. Applications should be addressed to the Hon. Sec., Joint Tuberculosis Council Post-Graduate Courses, The Larches, Farnham Royal, Bucks.

LIVER TREATMENT OF PERNICIOUS ANÆMIA.

THE May number of the *American Journal of the Medical Sciences* contains two new papers by Minot, Cohn, Murphy, Stetson, and Lawson on the treatment of pernicious anæmia. Having now had a very large number of patients under observation they are able to trace in greater detail than before the effects of using whole liver or liver extract. They roughly divide the cases into two classes, according to whether the red cell count is below 2½–3 million, or is above that figure. They say that in the latter class little or no reticulocyte response occurs as a result of liver treatment, though the red cell count rapidly rises, and this fits in with the fact that in such cases the marrow picture, as shown by bone punctures, is more or less normal (normoblastic). In the former class, consisting of cases with low red cell counts, typical reticulocyte responses are found; and it is in this group, according to their own findings and those of Castle and Peabody, that typical megaloblastic marrow is seen. This marrow picture is rapidly transformed by the use of liver, and it is thought that the simultaneous transformation of the marrow and the rapid rise and fall of the reticulocytes in the circulating blood are intimately connected, the reticulocyte being the result of a rapid maturation of the megaloblast. The number of reticulocytes per cubic millimetre at their peak is found to be inversely proportional to the red cell count at the beginning of treatment, an observation which can be employed either in estimating the potency of a new extract or in substantiating a doubtful diagnosis. These facts, it is pointed out, all support the view that pernicious anæmia is a result of faulty development of the red cells rather than of undue hæmolysis.

In reference to the amount of liver or extract which should be used, details are given of the response made by patients who were fed on doses too small to produce a maximal effect; from these it is deduced that the actual reticulocyte output per unit weight of liver is, within certain limits, roughly the same in every case, all the material supplied being used by the body. When full doses are given, some patients are able to employ more of the specific substance than others according to the condition of the marrow. This factor is obviously unknown at the beginning of treatment, but the American investigators consider that 300–400 g. of liver per day is enough in most cases, although patients in a critical condition should take 500–600 g., preferably in the form of an extract. A maintenance dose should be found for each patient when the red cell count is normal, since relapse will follow if liver treatment is discontinued. Two cases are mentioned in which thrombosis developed after very large doses had been given. In discussing the use of liver in other forms of anæmia, they say that true secondary anæmia presents quite a different problem; 45 cases treated showed no improvement comparable to what might have been expected in the Addisonian variety. Five cases of doubtful origin did, however, give a typical response. Two of them were anæmias occurring in pregnancy, and the other three suggested primary disease of the blood, but were unlike pernicious anæmia. Mention is made of a good response

being obtained in treating a case of infection with *Dibothriocephalus latus*, which is known to cause an anæmia of the primary type.

In a third paper, by Cohn, Minot, Alles, and Salter appearing in the May number of the *Journal of Biological Chemistry*, an interesting account is given of the methods employed in making liver extracts. Further purification of the extract referred to in the other two communications has been obtained by precipitation with phosphotungstic acid. A fraction of this precipitate is formed of phosphotungstates of a substance which contains about 19 per cent. of nitrogen, and which is probably of the nature of a polypeptide or a nitrogenous base; only 0·6 g. of this is necessary per day to produce a good reticulocyte response in a case of pernicious anæmia. Hitherto it has been necessary to test such extracts by observing their effect on patients, but it is mentioned that F. R. Sabin, of New York, has recently found that abnormally rapid development takes place in the megaloblasts of chick embryo preparations treated with potent liver extract. Also alterations in human reticulocytes in the presence of extract have been observed by Emerson. The advantage of this discovery to those engaged in the study of the specific substance contained in liver will at once be obvious.

EXCESS OF IRRADIATED ERGOSTEROL.

IT has always seemed possible, though not very probable, that injury might be caused by excessive doses of any vitamin. Several workers have attributed certain symptoms to administration of an excess of vitamin A or of vitamin B, but the specificity of the intoxications described has not been definitely established. A. Kreitmair and T. Moll [1] (1928), however, give an account of a hypervitaminosis with vitamin D, which sounds really alarming. Their attention was focused on the subject by an article in which W. Pfannenstiel [2] (1927) described the effect of feeding half-grown rabbits with various doses of a preparation of irradiated ergosterol. Small doses raised the bactericidal power of the blood, but large doses caused severe cachexia and death. This observation agreed with the experience of Kreitmair and Moll, who had noticed that a daily dose of 20 mg. of irradiated ergosterol brought about the death of white mice in about six days. They therefore decided to make a much more thorough examination, using a variety of animals and noting the symptoms carefully. For white mice they found that 1 mg. daily was a lethal dose, when continued for 20 days; larger doses caused more rapid death, but a smaller one, 0·5 mg., only caused loss of weight. For rats a dose of 5 mg. daily was lethal, for guinea-pigs 40 mg., for cats 5 mg., and for dogs 5 mg. per kg. of body-weight, but for fowls 50 mg. had no ill-effect, and for axolotls a dose of 10 mg. was innocuous. At autopsy an enormously rich deposit of lime was found, particularly in the walls of the vessels, in the heart muscle, stomach wall, lungs, kidneys, and intercostal musculature. The large vessels and often the small ones, too, were converted into rigid tubes. The spleen was often markedly atrophic and the small intestine showed hæmorrhagic inflammation of the mucous membrane. The picture was thus one of severe vascular sclerosis, to which the other symptoms were regarded as secondary, and it varied in severity with the species of animal.

In discussing their results, the writers recall the well-known cholesterol sclerosis which can be induced in rabbits, experimentally after five or six months' feeding with a daily dose of at least 0·1 g. cholesterol daily. They state that a similar ergosterol sclerosis occurs after two to three months' feeding with non-irradiated ergosterol, while the sclerosis just described, due to feeding with irradiated ergosterol, is acute in eight to fourteen days. It is clear from their own experiments that the time which symptoms of sclerosis take to develop is inversely proportional to the dose. Unfortunately, the authors do not mention what was the dose of non-irradiated ergosterol to which they refer. This is important, for it must be remembered that when ergosterol is irradiated, it is not all immediately converted into vitamin D; a certain portion remains unchanged. In absence of further evidence, it is possible that the sclerosis which Kreitmair and Moll observed to develop in feeding large doses of irradiated ergosterol may be due to the unchanged ergosterol and not to the vitamin; but to whichever element the effect may be due, the fact remains that large doses of irradiated ergosterol are toxic. This need not, however, cause uneasiness. The authors point out how enormous is the toxic dose, relative to the known dose needed to cure rickets. For the rat, for instance, the toxic dose is greater than 1 mg., while the healing dose is 1/10,000 mg. If we calculate the toxic dose for a man on the basis of that for the cat, it is found that 100 mg. daily would be needed to produce ill-effects in man. According to A. Hottinger [3] (1927) only 5 mg. daily are needed to cure an adult human being suffering from late rickets, tetany, or osteomalacia. The risk of overdosage in an adult thus seems to be very small. Dr. H. Mackay pointed out in THE LANCET of May 5th (p. 924) that nothing was known as to the possible effect of overdosage in an infant, and recommended discretion in the use of antirachitic preparations. It is reassuring to learn that in animals the margin between therapeutic and toxic doses of vitamin D is so great, but the fact that definite pathological changes have been recorded lends point to her warning.

[1] A. Kreitmair and T. Moll: Münch. med. Woch., 1928, lxxv., 637.
[2] W. Pfannenstiel: Klin. Woch., 1927, xlviii., 2310.
[3] A. Hottinger: Zeitsch. f. Kinderheilk., 1927, xliv., 3–4.

MINERVA.

THE twenty-ninth issue [4] of this admirable year book of the learned world follows the twenty-eighth, after an interval of less than two years. The time has been sufficient to expand the volumes, which are already rather stout to bear the name of the slim goddess of wisdom; and, as Dr. Gerhard Lüdtke expresses it, the abundance of material threatens to burst the bounds of a year book. In the last issue it was decided to print the names of the members of large scientific academies, and it is personal details of this kind which have increased the size of the volumes, to the great convenience of those who have to refer to them, as we are happy to testify. In the interval the publisher has issued a Minerva Index, containing all the scientific institutes mentioned in the year book arranged topographically, and this third volume will be issued later, bound up with the name-index of the two volumes now before us. The editor of the year book is following more and more the practice of making the entries in the language of the country concerned, so far as that language is of world-wide distribution. He justifies against all gainsayers his custom of keeping close to the current postal addresses of names and institutions, although the usual (pre-war) alternative names are given in print of similar size. An asterisk calls attention to information which has not been revised for this issue, and may therefore be somewhat behind the date of revision which, for the rest of the book, is Nov. 1st, 1927. Information regarding medical and technical societies in North America has again been extended, and a welcome innovation is the standardisation of Slavonic names by Dr. Kuziela. Dr. Lüdtke again acknowledges the editorial help of Dr. Friedrich Richter, and especially that of Frl. Chr. Pilger; their work must have been colossal. The first volume contains, as frontispiece, a portrait of the Spanish scientist, S. Ramon Cajal, and the second that of Dr. Krüsz, general director of the Prussian State Library.

[4] 2 Vols., 1457 and 1306 pp. Vol. 3 will contain 960 pp. Subs. price for the 3 vols M. 80, increased to M. 90 after full publication. Berlin and Leipzig: Walter de Gruyter and Co.

POST-GRADUATE MEDICAL STUDY IN PARIS.

THE Whitsuntide visit paid by the Royal Institute of Public Health to Paris hospitals, and its reception there, was an interesting gesture and counter-gesture which can hardly fail to have its effect on future medical relations between the two countries. The group itself was too large to organise for serious study. Some of the visitors, no doubt, did not aspire to anything more arduous than a cursory view of French medicine at its headquarters; but it was impossible for anyone who took part in the visit not to be impressed with the wealth of clinical material, with the vitality of the teaching staff, and with their ability to get through with the messages they intended to impart. Under such circumstances it is naturally the more dramatic and successful adventures of medicine which strike the eye than the patient and plodding work behind the scenes, but there is in Paris hospitals an ample background, and what was seen and heard was unlikely to suffer from the need for comparison and perspective. The language difficulty is not insurmountable; scientific talk is readily apprehended in any civilised tongue by those who know the elements of science, and everywhere, in theatre and lecture-room, the French voice and intonation were found to be well adapted for instruction. Paris hospitals, too, are organised in a way which surprises the Londoner. With one or two exceptions all of them are constituent parts of the Assistance Publique, and as such were being rebuilt and re-equipped, in accordance with a central plan, when the scheme was interrupted by the outbreak of hostilities in 1914. Some hospitals, like the Pitié, are now practically rebuilt; others, like the Salpêtrière, retain all their mediæval charm; while in many there is a piquant contrast between the new wards on the pavilion system and the old stone-work of the cloistered buildings. Another surprise to the Londoner is the spaciousness of the hospital grounds and the leafy verdure of the gardens as one passes from ward to ward, from theatre to laboratory. All the chief hospitals are situated within an easy tram or 'bus ride, almost within walking distance of the central school of medicine. The visit itself may be regarded as a reconnaissance rather than as a finished event, for among the party was a large sprinkling of recently qualified men and women on the look-out for opportunities of post-graduate study in some congenial direction. Four of the hospitals—Hôtel-Dieu, Pitié, Charité, Saint-Antoine—are organised specially for surgery, three others—Laënnec, Beaujon, Necker—for medicine, while obstetrical study centres at Baudelocque, Tenon, and Maternité, Beaujon being reserved for the instruction of midwives. In special subjects the ophthalmologist will turn to Hôtel-Dieu, the neurologist to Salpêtrière, the alienist to Sainte-Anne, the gynæcologist to Broca, the student of genito-urinary diseases to Necker. The Association for the Development of Medical Relations will offer any of these the information needed for choice and organisation of study. We shall return in more detail to the institutes visited, in the meantime warmly congratulating those who arranged the visit upon an event of some medical and international significance.

MATERNAL MORTALITY.

WHEN introducing the estimates of the Ministry of Health on May 15th, Mr. Neville Chamberlain [1] contrasted the decline of the death-rate among the population in general, and among young children, with the continuance of a high maternal mortality. He pointed out that out of every 250 mothers one died in childbirth—a state of things which had persisted for the last 20 years—and said that the time had come to make a "great new effort" to bring down these persistently high figures. That they are very far from irreducible will be evident to anyone familiar with the figures quoted in the discussion reported on p. 1178 of our present issue. After outlining a scheme by which local medical officers of health will inquire into the circumstances of every death during childbirth and practitioners will be asked to supply information to the Ministry, Mr. Chamberlain went on to announce the formation of a committee to consider the training and working conditions of midwives. We have already recorded [2] the terms of reference and membership of this committee, and need only recall that its medical members are Sir Robert Bolam (chairman), Dr. J. W. Bone, Dame Janet Campbell, Dr. W. A. Daley, Dr. J. S. Fairbairn, and Dr. F. N. Kay Menzies. Its appointment has now been closely followed by the establishment of a second Departmental Committee, which is "to advise upon the application to maternal mortality and morbidity of the medical and surgical knowledge at present available, and to inquire into the needs and direction of further research work." Sir George Newman, the Chief Medical Officer of the Ministry, will be chairman, and the members, all of whom belong to the medical profession, are: Prof. F. J. Browne, Dame Janet Campbell, Mrs. Ethel Cassie, Dr. Leonard Colebrook, Prof. Archibald Donald, Dr. C. E. S. Flemming, Sir Walter M. Fletcher, F.R.S., Dr. Harold Kerr, Dr. W. H. F. Oxley, Prof. Miles Phillips, Dr. C. E. Tangye, and Dr. O. L. V. de Wesselow. The secretary will be Dr. Margaret Hogarth, to whom all communications relating to the work of the Committee should be addressed at the Ministry.

POST-OPERATIVE TETANUS IN SCOTLAND.

As an outcome of an inquiry into the occurrence of post-operative tetanus undertaken for the Scottish Board of Health, Prof. T. J. Mackie concludes that the manufacture of surgical catgut should be controlled by the Ministry of Health under the Therapeutic Substances Act. In collaboration with Dr. D. G. S. M'Lachlan, Prof. Mackie has prepared and published a report [3] which sets out the circumstances surrounding a series of 11 cases occurring in one institution, presumably in Scotland. The name of the institution is not revealed, nor the date of the so-called "recent cases," nor is there any indication in the terms of reference over what period the inquiry was pursued or when it was completed. All these details, which must have been deliberately omitted, would be of interest to readers of the report, though it cannot be said that any of them are directly relevant to the purpose of the inquiry, or that its scientific value is diminished by their absence. In official reports, however, it is customary for full information to be given, and public confidence is more likely to be enhanced than diminished by a documented account of untoward events, and of the steps taken to prevent their recurrence. It is at any rate satisfactory to be assured that the last case of the series occurred over a year ago. After 4 cases of tetanus and 1 of gas gangrene had been reported within six weeks, the particular supply of catgut was stopped "and during the succeeding 12 months (up to present date) no further cases" were reported. From the schedule in which details of the 11 cases are tabulated, it appears that nine developed tetanus, one gas gangrene, and one a sporing anaerobe infection with muscular spasms, of which the organism was not demonstrated to be tetanus. The incubation period varied between 7–12 days, except in the case of gas gangrene (two days), and in the non-fatal cases of tetanus (14 days). Six of the cases were gynæcological, five being repair operations. Catgut from the same source was used in all cases. Five occurred in one theatre, the rest being distributed over different theatres; the operations were performed by ten different surgeons. The technique of sterilisation in

[1] THE LANCET, May 19th, p. 1049.

[1] THE LANCET, May 26th, p. 1104.

[3] An Inquiry into Post-Operative Tetanus. Report to Scottish Board of Health. 1928. H.M. Stationery Office. Pp. 62. 1s.

the various theatres was inquired into and appeared to be highly efficient. The question of auto-infection was considered and not definitely excluded, but in view of the fact that other inquiries pointed so definitely to an external source of infection, it was not pursued.

Prof. Mackie gives numerous references from recent medical and surgical literature to records of cases of post-operative tetanus; in many of these catgut was considered the most probable cause. The fact that the tetanus bacillus occurs as a commensal organism in the intestinal tract of various herbivorous animals suggests that surgical catgut, which is prepared from sheep's intestines, must be regarded as a potential source of the organism. The anaerobic sporing bacilli produce highly resistant spores, capable of withstanding physical and chemical agencies which kill non-sporing organisms, and, moreover, spores deeply embedded in the substance of a catgut string may be protected from germicidal agents which would otherwise destroy them. The incidence of post-operative tetanus in the particular institution with which this inquiry was concerned was peculiar in that a series of cases occurred within a limited period. During this period the institution was supplied with surgical catgut almost entirely from one source, mostly in the form of "dry strings" which had already undergone processes of sterilisation in their preparation from raw material, but were not guaranteed as free from surface contamination; before surgical use they were subjected to further bactericidal treatment.

The relation of contaminated catgut to post-operative tetanus and gas gangrene was studied experimentally by Prof. Mackie and Dr. M'Lachlan, and also the resistance of bacterial spores to physical and chemical agencies, with special reference to the sterilisation of catgut. Specimens of the catgut were taken at various stages of preparation and were examined for tetanus and allied bacilli. In a considerable proportion of specimens from different sources sporing anaerobic bacilli related to *B. tetani* were found, and from one specimen *B. tetani* was actually isolated after the catgut had been treated by the routine bactericidal processes and had been stored in a stoppered bottle ready for use. Prof. Mackie and his colleague came to the conclusion that certain of the sterilisation processes relied on in the preparation of catgut were not efficacious. Amongst the various agents tested they found the most effective and practicable to be iodine in a watery solution, and hydrogen peroxide. These processes should, however, be controlled by bacteriological tests on samples from each batch. It must be remembered that the presence of B. *tetani* in raw material may be highly variable; certain batches only may be contaminated, and, moreover, bactericidal processes, even if not entirely effective, may have destroyed the majority of spores. The survivors may be extremely scanty and irregular in their distribution in the catgut strands, and the thickness of certain strands may protect them from destruction. These considerations may account for the infrequency of cases relative to the total number of operations carried out in which catgut was used. The possibility that primary sepsis in an operation site may be a predisposing factor in the development of post-operative tetanus receives some support from this investigation. In any case there seems no doubt, in view of the difficulties of eliminating sporing organisms from this material and the inefficacy of various methods which have been relied on for this purpose, that the manufacture of surgical catgut should be subjected to more rigid control.

Two donations of £50,000 each have been made to the Royal Free Hospital, London, by Lord Riddell and Mr. Alfred Levy, the President and Treasurer of the hospital. These sums were guaranteed some time ago in order to secure a gift of £200,000 from Mr. George Eastman, which is to be used for the foundation of a dental clinic. This clinic will be started on the same lines as one established by Mr. Eastman at Rochester, U.S.A.

THE Samuel Augustine Courtauld Institute of Biochemistry at the Middlesex Hospital will be opened at 3.30 P.M. on Thursday, June 14th, when Sir Archibald Garrod will give an address on the Place of Biochemistry in Medicine. We are asked to say that former students of the hospital will be admitted on presentation of their card.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 26TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox 258 (last week, 336); scarlet fever, 1575; diphtheria 1044; enteric fever, 53; pneumonia, 1192; puerperal fever, 50; puerperal pyrexia, 91; cerebro-spinal fever, 5; acute poliomyelitis, 2; acute polio-encephalitis, 2; encephalitis lethargica, 27; typhus fever, 2; continued fever, 2; dysentery, 12; ophthalmia neonatorum, 107. No case of cholera or plague was notified during the week.

The cases of small-pox were notified from the following 27 counties: London, 5; Bedford, 6; Chester, 1; Derby 3; Devon, 3; Durham, 50; Gloucester, 6; Hertford, 4; Kent, 1; Lancaster, 12; Leicester, 5; Lincoln, parts of Holland, 2, parts of Kesteven, 2, parts of Lindsey, 4; Middlesex, 1; Norfolk, 5; Northampton, 1; Northumberland, 24; Nottingham, 9; Stafford, 22; Surrey, 2; Sussex East, 1; Warwick, 10; Yorks, North Riding, 6; West Riding 44; Glamorgan, 8; Monmouth, 21. It is noteworthy that although the disease is so widespread the total number of cases reported is not increasing.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on May 29–30th was as follows: small-pox, 25; scarlet fever, 1679; diphtheria, 2059; enteric fever, 27; measles, 999; whooping-cough, 147; puerperal fever 15 (plus 13 babies); encephalitis lethargica 69; poliomyelitis, 1; "other diseases" 29. At St. Margaret's Hospital there were 15 cases of marasmus, and 10 babies (plus 7 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 2 (1 from enteric fever, 51 (26) from measles, 4 (1) from scarlet fever, 42 (13) from whooping cough, 40 (11) from diphtheria, 37 (6) from diarrhœa and enteritis under two years, and 74 (22) from influenza. The figures in parentheses are those for London itself.

The fatal case of enteric fever outside London occurred at Salford. Of the 25 fatal cases of measles outside London 9 were reported from Liverpool and 3 from Middlesbrough. Of the 29 fatal cases of whooping-cough outside London 9 were reported from Birmingham and 5 from Liverpool. During the same week 9 deaths from whooping-cough were reported from Glasgow.

The number of stillbirths registered during the week was 317 in the great towns (corresponding to a rate of 44 per 1000 births) including 53 in London.

The death assigned to small-pox at Bradford in the return for the week ended May 12th was, we learn from Dr. J. J. Buchan, that of a man, 46 years of age and unvaccinated, admitted in an extremely emaciated condition, to the small-pox hospital from the Bradford Municipal Hospital where he had been a patient since October last, suffering from neoplasm of the lung. The small-pox was of confluent type and probably only shortened his life by a few weeks, the primary cause of death being neoplasm of the lung.

The Cases of Typhus Fever.—Two cases of typhus notified in the Metropolitan Borough of Stepney were those of a tailor's machinist, aged 48, admitted to St. Peter's Hospital, Whitechapel, on April 30th with a diagnosis of influenza, and his wife, aged 51, admitted on May 30th. In the man's case pyrexia and continued headache were followed by a state of complete apathy in which the development of a petechial rash suggested the need for special tests when both the Weil-Felix and Wassermann reactions were found to be positive. In the woman's case the temperature fell by lysis and rash was absent, although delirium persisted; positive findings of Wassermann and Weil-Felix assured the diagnosis and resulted in

her transference to the M.A.B. Hospital on June 2nd. Dr. A. Randle and Dr. C. Marian have kindly supplied clinical histories of these two cases, embodying a number of interesting features, which we hope to publish next week. A case of typhus notified in the urban district of Herne Bay was, we learn from Dr. A. M. Watts, that of a patient residing in a neighbouring rural district. There is, he adds, some doubt as to the diagnosis, although the clinical condition justified the notification.

A Small Epidemic of Typhoid at Bath.—As will have been seen from our summary of the Weekly Returns a number of cases of typhoid fever have been notified from Somerset during April and May. Twenty-six of these cases have occurred in an outlying part of the city of Bath, known as Bathwick, situate too high on the hillside to be reached by the ordinary water-supply of the city. It is now regarded as probable that the outbreak has been due to the pollution by a faulty drain of the highest of three water tanks on the hillside, as there has been no evidence of further infection since this drain has been put right. The last case, notified on June 4th, was that of a patient who had been under suspicion for ten days, and we understand that Dr. J. F. Blackett, the medical officer of health, regards the epidemic as over. Unfortunately, two of the cases have proved fatal.

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M.—Lt.-Colonel R. and Mrs. McCarrison, (Coonoor, India); Dr. S. Morton Mackenzie (Dorking); Dr. Elizabeth McVail; Sir Philip Magnus, Bt. (Chilworth); Lady Mott (Bournemouth).

N.—Mr. H. W. Nott, M.R.C.S. (Guildford).

O.—Dr. Joseph O'Connor (Woking); Lt.-Col. F. O'Kinealy; Mr. Robert Ollerenshaw, F.R.C.S. (Manchester).

P.—Dr. George Parker (Clifton); Mr. Norman Patterson, F.R.C.S.

R.—Mr. H. H. Rayner, F.R.C.S. (Manchester); Mrs. Sophia Richardson, M.D. (Cheltenham).

S.—Dr. D. W. Samways (Mentone); Dr. S. Gilbert Scott; Dr. W. W. Shrubshall (Brighton).

T.—Dr. Edward Thompson (Omagh).

W.—Dr. Chalmers Watson (Drem, East Lothian); Dr. W. Watkins-Pitchford (Bridgnorth); Dr. G. N. Wauchope (Hove); Dr. J. W. Weir (E. London, S. Africa).

Incorrectly entered in previous list.—Mr. Eric Watson-Williams, F.R.C.S., should read Dr. Patrick Watson-Williams.

Those who may have overlooked the matter are invited to send their subscription before Saturday, June 16th, when the list must be definitely closed. The organising committee will then draw up recommendations for the disposal of the fund, and all subscribers will shortly afterwards be requested to attend a meeting to consider them. The hon. treasurer is Sir StClair Thomson, 64, Wimpole-street, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXIX.—THE AMBULATORY TREATMENT OF VARICOSE VEINS.

I.* GENERAL CONSIDERATIONS AND TECHNIQUE.

THE results obtained in the treatment of varicose veins by means of injections show this method to have a permanent place as a therapeutic measure. Many different substances are in current use as intravenous sclerosing agents, but the object of all of these is the production of a phlebitis in the vein wall. This phlebitis is primarily either physical or chemical, depending upon the agent employed. A gradual thrombosis of the vein occurs; this is followed by organisation and eventually fibrosis of the thrombus, leaving a thin fibrous cord in place of a dilated and tortuous vein. The treatment is throughout ambulatory and need in no way interfere with the patient's work or recreations. Considerable discussion has recently centred around questions of technique, notably the nature and amount of the substance injected, the posture of the patient, and the use of a tourniquet. The method is not yet old enough to have become stabilised in detail; but the technique set out below has proved convenient and easily workable. With the exception of patients in whom contra-indications exist, the method is applicable to all cases of varicose veins, even in old patients or in the presence of complications such as dermatitis or ulceration.

The Circulation in Varicose Veins.

A considerable body of evidence both clinical and experimental goes to show that there is marked abnormality of the venous circulation in varicose conditions. On the whole, this evidence suggests that in patients with severe varicosity of the internal saphenous vein and in whom the Trendelenburg sign is positive, the blood flow in this vein is directed away from the heart when the patient is in the upright posture, but if the limb be raised to 45° or higher the flow is either stationary or sluggishly towards the heart.

Experimentally, this has been shown by the use of the hæmadromometer and by radiographic studies. That there is similarly a reversal of the blood flow in the skin capillaries of the leg under these conditions has been shown by Magnus using the skin microscope. In severe varicose states, therefore, the blood coming from the deeper parts of the limbs passes upwards in the femoral vein, reaches the level of the saphenous opening, and a certain amount of it passes into the internal saphenous vein and travels distally along this. From the lower part of the saphenous vein area the blood returns to the deeper system either by way of anastomotic veins, or after having passed through the capillary bed once more, in a reverse direction. Under these conditions certain areas of skin will be supplied with blood which has already once circulated through the capillary bed. These factors of the venous circulation are of fundamental importance in the development of varicose dermatitis and ulceration, in their chronicity and their resistance to purely local treatment.

This theory of the venous circulation is supported by clinical observation of the conditions under which varicose ulcers may be cured. Healing may be attained by adequate rest, by bandaging the affected limb to secure competent valve action of the veins, by surgical extirpation of the diseased veins, or by their intravenous thrombosis. All of these methods lead to the breaking of the vicious circle which permits of venous stagnation and capillary reversal.

* Part II., dealing with Reactions, Complications, and Results, will appear in our next issue.

The varicose ulcer results primarily from malnutrition of certain areas of skin due to the mechanics of the circulation in varicose conditions, and its prophylactic treatment lies in the cure of uncomplicated varices.

The Histology of Thrombosis.

The processes occurring in the vein wall and its lumen following intravenous sclerosing injections have been studied experimentally, both in man and in animals, by removing portions of veins at varying intervals afterwards. These studies all show that in response to the irritation of the injected fluid a chemical phlebitis of the vein wall occurs, leading to the production of a firm, adherent thrombus over the affected segment. There is considerable swelling of the wall of the vein and proliferation of its cell elements, and this is rapidly followed by organisation of the thrombus. The fibrosis, however, may take three months to become completed. The thrombosis of the vein occurs in response to the very active changes occurring in the vein wall, and at no stage whatever is the thrombus soft or loosely attached. For these reasons detachment of a portion of the thrombus with all its attendant risks becomes a very remote possibility.

The Quinine-urethane Method.

Many different solutions can be employed to produce thrombosis in varicose veins. The one about to be described was introduced by Génévrier, and gives very good results.

Quinine Hydrochloride, 4 g.; urethane, 2 g.; aq. dest., ad 30 c.cm.

The solution is made up in small rubber-capped vaccine bottles and is then sterilised by boiling. As some of the quinine salt crystallises out on cooling, the bottles should be allowed to stand in warm water for a few minutes before use to redissolve this.

Technique of Injections.

The technique I employ is as follows:—

With the patient standing an Esmarch's tourniquet is applied, proximal to the proposed site of injection. The only object in applying the tourniquet is to render the veins prominent during the actual insertion of the needle into the lumen of the vein, and in all cases it should be removed before the injection is given. The patient then lies down and the area of proposed injection is thoroughly cleaned with spirit. The needle of a 5 c.cm. syringe containing the quinine-urethane solution is introduced obliquely through adjacent healthy skin into the lumen of the vein it is desired to thrombose. The plunger is slightly withdrawn to confirm the correct position of the needle, and the tourniquet removed. The injection is then slowly given at the rate of 1 c.cm. in 15 seconds. The object of removing the tourniquet before giving the injection is to have the vein in as collapsed a state as possible during the injection, and to ensure the quinine-urethane solution reaching the vessel walls in a high concentration. The needle is withdrawn and firm digital pressure applied with a sterile swab at the site of injection for about two minutes. A small collodion dressing on wool is then applied and when dry the area is firmly bandaged. The maintenance of digital pressure after injection, followed by bandaging, is designed to lessen the risk of leakage of blood mixed with the injection material into the tissues around the site of puncture. Should this occur local complications may follow. The patient is allowed to proceed home and to carry on with his normal activities. Rest is never enjoined but the patient is always warned of the reactions which follow injection. He returns for further treatment at the end of a week.

Dosage.

In using the quinine-urethane method it is always advisable to commence injections with a very small dose. The one usually employed is ½ c.cm. The object of this is to test, firstly, the local reaction of the veins to the solution; and, secondly, the patient's sensitivity to quinine, though it is exceptional for any general reaction to occur in the doses customarily given. After the first injection larger doses may be used, but never more than a total of 4 c.cm. at any one sitting. The injection may be given in amounts of 1 c.cm. or more at various sites, but as a rule not more than 3 c.cm. should ever be given at one site. In the majority of cases an injection of 1 c.cm. will be found sufficient to thrombose an area of about 2 inches on either side of it. But it should be borne in mind that no two cases react exactly alike, and decisions as to dosage must be influenced by the degree to which thrombosis is produced.

Site of Injection.

The first injections should always be made in the most distal part of the affected area and each succeeding injection should be made proximal to it. This enables the operator to distinguish easily veins which are still patent from those which are thrombosed. In the majority of cases, therefore, the injections will begin on the inner side of the lower third of the leg. If, however, the varicose condition involves the inner side of the foot and the region of the internal malleolus, these sites should not be injected at the commencement of the treatment; after the course the veins will probably be found to be much smaller in size and as a rule give rise to no further symptoms. Should it be decided to inject these areas, however, it is as well to bear in mind that the pressure of boots and shoes is likely to cause some discomfort whilst thrombosis is proceeding.

The whole of the saphenous tract may be treated to within 4 inches of the saphenous opening.

REGINALD T. PAYNE, M.B., B.S., F.R.C.S. Eng.,
Chief Assistant to a Surgical Unit, St. Bartholomew's Hosp.; Registrar, Royal National Orthopædic Hosp.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lts. R. W. Higgins to *Tamar*, for R.N. Hospl., Hong-Kong; and D. R. Campbell to *Impregnable*, temp.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. H. E. Hall to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS,

Maj. C. R. Millar to be Lt.-Col.

Maj. B. Varvill retires on retd. pay.

Capt. T. H. Twigg to be Maj. (Prov.) and remains secd.

Temp. Capt. J. W. Pell relinquishes his commn. and resumes the rank of Capt.

Temp. Lt. J. D. Cooper relinquishes his commn.

ARMY DENTAL CORPS.

Capt. P. E. Jessop, late T.A. Res. of Off., to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

General List: Maj. J. H. Donnell, having attained the age limit, relinquishes his commn. and retains his rank.

General Hospitals: Capt. W. Seymour, having attained the age limit, relinquishes his commn. and retains his rank.

Hygiene Companies: Capt. D. Smith, having attained the age limit, relinquishes his commn. and retains his rank.

ROYAL AIR FORCE.

The undermentioned Flying Officers are promoted to the rank of Flight Lt.: P. H. Perkins and S. F. Heatley.

RESERVE OF AIR FORCE OFFICERS.

Flight Lt. F. K. Wilson is transferred from Class D (ii) to Class D (i).

INDIAN MEDICAL SERVICE.

Capts. Munguldas Tuljaram Khandwala, J. Rodger, and Ghulam Ahmad Khan to be Majs.

Capt. R. T. W. Stoney retires, receiving a gratuity.

Special Articles.

FOOT-AND-MOUTH DISEASE IN MAN.

By J. A. ARKWRIGHT, M.D., F.R.C.P., F.R.S.,
ASSISTANT BACTERIOLOGIST, LISTER INSTITUTE, LONDON.

ALTHOUGH the occurrence of foot-and-mouth disease in man has lately been mentioned in the daily press as a definite risk, human cases are rarely heard of nowadays, and it is doubtful how many of those formerly so described were really due to this cause.

During the latter half of the nineteenth century, when the disease was very prevalent in our flocks and herds, many cases of stomatitis in man, sometimes accompanied by vesicles on the hands, were attributed to the same infection. Some of the human patients had been in contact with diseased cattle, but most of them were believed to have been infected by drinking their milk. The transmission from man to man has only rarely been suspected. In some of the years during that epizoötic period not only was the total number of animals attacked very large, but the number which were sick at the same time must have been very great, since slaughter was not adopted as a general policy.

In 1869 A. McBride recorded a number of cases in man collected from 22 different sources. All these he regarded as undoubted infections with foot-and-mouth disease. In some instances several members of one household were affected. Of four cases of vesicular stomatitis which he observed himself three occurred in one family after drinking the milk of cows suffering from the disease; the fourth, a butcher, appeared to have directly inoculated his mouth by holding an infected knife between his lips. In the same year Dr. Thorne Thorne investigated an epidemic of stomatitis the distribution of which was associated with the milk-supply. He inclined to the view that the infection was derived from cattle suffering from foot-and-mouth disease. In 1884 an epidemic of severe vesicular tonsillitis and enlarged glands occurred at Dover. In this outbreak also infection by the milk of cows suffering from foot-and-mouth disease was suspected. About the same time a smaller outbreak attributed to a similar cause was reported from Norfolk; the patients were children, and two of them died. Cases of foot-and-mouth disease occurring singly or in groups have often been described on the Continent. In 1896 Bussenius and Siegel collected records of over 1500 supposed cases of this disease in human beings including 600 which had recently occurred in Prussia.

The real nature of many of these outbreaks, however, was disputed at the time and subsequent experience has suggested that cases of sore mouth and throat and of pustular eruption due to other causes have often wrongly been accepted as manifestations of foot-and-mouth disease in human beings. Epidemics of fever and tonsillitis due to streptococci, in which the infection is spread by milk, are now well known and not infrequently the infection has been traced to cows with inflamed udders. Moreover, since milch cows attacked with foot-and-mouth disease often suffer from mastitits due to secondary infection with streptococci and other bacteria, it seems probable that some of the milk-borne epidemics referred to above were due to bacterial infections and not to foot-and-mouth disease.

Transmission to Man.

In 1921 Lebailly investigated ten cases of aphthous stomatitis, believed to be foot-and-mouth disease, which were attributed to drinking infected milk. He made three attempts to transfer the infection from man to cattle without success. He also tried three times to transmit foot-and-mouth disease from cattle to man, but with negative results. Lebailly accordingly expressed his doubts as to the possibility of the transmission of foot-and-mouth disease to man. But in spite of this and other adverse criticism, which has been in part a reaction against the former too ready belief in human susceptibility to foot-and-mouth disease, there can be little doubt that this disease has occasionally been transmitted to man. For instance, the case is recorded of a veterinary surgeon who accidentally infected himself from an animal which he was examining and had five vesicles on the lips and tip of the tongue, and some of the cases related by McBride appear to be based on equally good evidence. In three or four instances the diagnosis has been confirmed by the re-infection of animals from man. Schautze in 1893 described a case of foot-and-mouth stomatitis in man from which he successfully inoculated two calves. Bertarelli, in 1908, recorded two human cases acquired by direct contact with animals; in both there were large vesicles in the mouth and on the lips. With vesicular fluid from one patient he obtained typical vesicles on the ear and lip of a calf. Favero also is said to have successfully inoculated a calf from a human case in 1914. It must, however, be remembered that vaccinia and herpes labialis and some lesions due to coccal infections are also transmissible to animals and vice versa.

Comprehensive and critical reviews of all available records of reputed foot-and-mouth disease in man are to be found in the papers by Cadiot (1914) and by Gins and Krause (1924). The diagnosis of foot-and-mouth disease in man can only be conclusively established by producing in a susceptible animal local and generalised vesicles recognisable by one familiar with the disease, and by showing that immunity to the same type of foot-and-mouth disease results. These criteria have never been satisfied, but no doubt can reasonably attach to the two following records of foot-and-mouth disease in man:—

Pape, who with Waldmann in 1921 discovered the method of infecting guinea-pigs with foot-and-mouth disease, cut his thumb with a broken glass vessel whilst collecting virus from a pig. Two days later he had slight headache and shivering. On the third day vesicles began to develop on the palms and soles and continued to appear at these sites, but not elsewhere, for two days. There were 25 vesicles in all varying in size from a flax-seed to a cherry-stone. They contained clear fluid and rapidly healed without suppuration. The only buccal lesion was a slight swelling and tenderness on the gum on one side at the time of the cutaneous eruption. This occurrence was before the discovery of the susceptibility of guinea-pigs and no animals were inoculated, but Pape, when later inoculated with foot-and-mouth virus, proved to be immune.

In 1922 several cases of vesicular stomatitis, sometimes with vesicles on the hands also, occurred in the province of Como, where there was an epizoötic of foot-and-mouth disease. Clear fluid from the vesicles of one of these patients with bullous stomatitis was taken to Milan and inoculated by Pancera into guinea-pigs and a calf, all of which developed typical lesions.

Diagnosis of the Disease.

The important points in clinical diagnosis in man in the present state of knowledge appear to be initial fever and superficial vesicles containing clear fluid on the lips and buccal mucous membrane, with perhaps vesicles on the flexor aspects of the hands and feet. Both the incubation period and the period of fever and eruption are short, not exceeding three or four days each. An exact and detailed account of more cases whose diagnosis is incontrovertible is very much needed. Sometimes cases have been described as foot-and-mouth disease in man in which besides stomatitis a skin eruption has occurred on the lower legs, forearms, and backs of the hands and has especially affected the beds of the nails, causing the latter to be deeply grooved or even shed. There does not seem to be any experimental evidence confirming the diagnosis in such cases and in Pape's case the skin lesions were confined to the palms and soles as is also the case in guinea-pigs. It is questionable whether the diagnosis can certainly be made at the present time without animal experiment, especially where infection by milk is suspected. Such an investigation can only be carried out in this country with the special sanction of the Ministry of Agriculture.

(*References at foot of next page.*)

THE POSITION OF VOLUNTARY HOSPITALS.

A SURVEY OF PROGRESS.

THE final report [1] of the Voluntary Hospitals Commission, issued last week, opens with an expression of regret at the death of Sir Robert Hudson who had been a member of the Commission since its first appointment. The remaining members of the Commission are the Earl of Onslow (chairman), Sir Robert Bolam, M.D., Sir John Rose Bradford, M.D., Dr. R. C. Buist, Lord Clwyd, Mr. H. Wade Deacon, Major W. E. Elliot, M.B., Sir George Makins, F.R.C.S., Mr. D. O. Malcolm, Dr. F. N. Kay Menzies, Sir E. Cooper Perry, M.D., with Mr. L. G. Brock (secretary), and Mr. P. Barter (assistant secretary). Owing to his absence in India, the Marquess of Linlithgow was unable to take part in the Commission's deliberations on the present report.

The Previous Report.

In the report [2] of July, 1925, was set out the result of an inquiry into the extent of the additional voluntary hospital accommodation required in England and Wales, and the best means of providing and maintaining it. As the result of a survey of the existing hospital accommodation, carried out with the assistance of the local voluntary hospital committees, the conclusion was reached that, owing to the inability of the hospitals to undertake extensions during the war and for some considerable period afterwards, the accommodation was short by 10,000 beds of what was required to provide a reasonable standard of adequacy. In arriving at this figure, regard was had to the number of additional beds which it was reasonably probable the hospitals could maintain, assuming that the funds for necessary capital expenditure could be found. The information then collected by the Commission satisfied it that the shortage of bed accommodation then existing was causing much avoidable suffering, as was evidenced by the very large number of persons who were reported to be waiting admission to hospitals. The situation disclosed by the survey was regarded as grave and certain to prejudice the future of the voluntary system.

Refusal of a Government Grant.

The present report recalls that early in 1926 the Commission was informed by the Minister of Health that the financial situation of the country was such as to make it impracticable at that stage to proceed with the proposals for a grant from public funds towards the cost of new construction on the lines of its recommendations. Its main task having been accomplished, the work of the Commission is now being laid down, with a regret that it has been impossible to implement proposals to which so much time and thought have been devoted. In the absence of any prospect of a Parliamentary grant, the Commission concludes its work by summarising the position as it exists at present in comparison with that disclosed by the survey of 1924.

Extension of Accommodation.

Without some assistance from public funds it was not to be expected, the Commission states, that rapid progress would be made. The figures for 1927 are not available, but statistics given in an appendix prove that during this period of 2½ years the hospitals have shown marked activity in the matter of extensions, and during the latter part of that period the rate of expansion has considerably exceeded the provision required to keep pace with the growth of the population, with the result that the arrears of the war period are being gradually, but appreciably, reduced. Speaking generally, this expansion has been more rapid and more widespread than was anticipated.

In comparing the new figures with those given in a previous report, it is necessary to make allowance for the growth of the population, and the excess of bed accommodation available at the end of December, 1926, over the corresponding figures for June, 1924, must not be taken as representing a net gain. At the time of the 1924 survey the ratio of beds to population was 1·33 per 1000. This ratio, however, was based upon a figure of accommodation which, in our opinion, was 10,000 beds short of what was reasonably necessary. If this deficiency had not existed the ratio of beds to population would have been 1·6 per 1000, and this represents the rate at which the hospitals must expand to keep pace with the growth of population. The increase in population in the 30 months between the date of the 1924 survey and the end of 1926 is estimated at approximately 638,000. On the basis of 1·6 beds per 1000 it was necessary, therefore, for the hospitals to provide 1020 beds to meet the increase in population.

The returns received from local voluntary hospital committees, including King Edward's Fund (which acts as the local committee for London) show that in this period 3829 beds were actually provided, or 2809 more than the number required to meet the growth of population. The reduction of the arrears to this extent in 30 months represents an average reduction at the rate of 1124 beds per annum. In fact, however, the expansion has not been spread evenly over this period, and as the rate of increase in 1926 has been appreciably higher, the Commission hopes that the top of the curve has not yet been reached.

These figures naturally suggest the question as to how far this rate of progress can be regarded as satisfactory. It is admittedly less than is ideally desirable, but, on the other hand, it is considerably better than the Commission had reason to anticipate in framing its last report. Taking as the test, not the actual number of beds added, but the amount of money becoming available for new construction, the position appears still more hopeful. In London the receipts for building purposes amounted in 1925 to £735,000, and in 1926 to £479,000, as compared with an average of £308,000 for the three years 1922–24. It is recognised that the position for London does not necessarily reflect the position of the country generally, owing to the fact that King Edward's Hospital Fund tends to attract special benefactions, and it has, in fact, received several unexpectedly large bequests during this period. But, though figures for the provinces are not available, there is ground for believing that the amounts appropriated for building purposes have substantially increased, and we may reasonably expect a further improvement in the rate of progress.

Funds for Maintenance.

Information which has become available since the previous report confirms the Commission's view that there is no ground for apprehension as to the ability of the hospitals to provide funds for the maintenance of the additional beds. Thus, although in 1925 a substantially larger number of beds had to be maintained than in the previous year, the excess of income over expenditure amounted to as much as £734,000, or over £100,000 more than in 1924. Owing chiefly to the industrial conditions prevailing in 1926 the financial position in that year was less favourable than in 1925, but with the return to more normal conditions we are confident that the position will again improve. If the hospitals had been faced with these conditions in 1921 or 1922 they would probably have suffered irreparable harm, and the success with which the hospitals met this crisis indicates the extent to which the financial structure of the system has recovered from the strain of the war period. But, although in the aggregate a deficit has not been experienced since 1922, there are still areas in which the income of the hospitals is insufficient to meet the expenditure, and in which for this reason

[1] H.M. Stationery Office. 3*d*.
[2] H.M. Stationery Office. Cmd. 2486.

Foot-and-mouth Disease in Man.

(*Continued from previous page.*)

References.—McBride, A.: Brit. Med. Jour., 1869, ii., 536. Cadiot: Rec. de Méd. Vétér., 1914, xc., 296. Gins, H. A., and Krause, C.: Ergebniss. d. allgem. Path. u. pathol. Anatom., München, 1923–24, xx., 2 Abt., 805.

t has not yet been possible to undertake extension on an adequate scale. These areas comprise some of the most important hospital centres in the country. Indeed, it is the large general hospitals with medical schools attached in which the costs of maintenance are higher than in other hospitals, which find the greatest difficulty in collecting the funds necessary for carrying on the ordinary work of the hospital to the fullest extent. Failure to solve the problems of maintenance and extension in those areas cannot fail eventually to react to the prejudice of the voluntary system.

Mass Contribution.

It is noticeable, the report continues, that in certain areas where recovery has been most marked some system of mass contribution has been established. In reviewing the sources of income upon which the voluntary hospitals can rely, receipts from legacies are necessarily a problematical element. As regards subscriptions, some few hospitals have received princely benefactions from individual contributors; but the percentage of income derived from large subscriptions is scarcely likely to increase. The interest of the middle-class subscribers has been, the Commission thinks, remarkably well maintained, having regard to the fact that the proportion of these subscribers who benefit directly from the existence of the voluntary hospitals is comparatively small. But it would be a mistake to look for a considerable increase of income from this source. The only quarter whence any substantial growth of income may be looked for in future would be from contributions from the industrial classes. The permanence of the voluntary system depends upon its ability to meet the needs of the people, and nothing is so certain to imperil its continuance as the growth of long waiting-lists. Excluding London, whose position as the consultant centre for much of south-east England is quite exceptional, most of the hospitals which are prosperous and which are keeping pace with the growing demands upon them are those which draw revenue from mass contribution schemes.

The Commission therefore reiterates its conviction that the future of the voluntary system depends in a large measure on its success in securing in one form or another the continued support of the small contributor. It must be recognised, however, that the framing of any scheme of mass contributions calls for the exercise of great care to avoid the acceptance by the hospital of liabilities which cannot be discharged, or the creation in the minds of contributors of expectations which may not be fulfilled. At the same time the effect of such scheme upon the government of the hospital and the relations of the medical staff must also be taken into consideration. It is hoped that those local voluntary hospital committees which have not turned their attention to this problem will make a real effort, in conjunction with hospitals, to establish, under adequate safeguards, such schemes wherever circumstances permit. Heretofore this conclusion has not been pressed upon local committees because of the manifest risks and difficulties which the system entails. But the experience of recent years has convinced the Commission that this is the main source of new income, and while the dangers are real the Commission does not believe them to be insuperable.

Local Voluntary Hospital Committees.

The local committees instituted on the recommendation of Lord Cave's Committee to facilitate the distribution of the Government grant are nearly all still in existence, but their activities vary. Those in the large centres of population are the most prominent, and in many places have filled an important part in the local health machinery. In country districts the committees are less active owing to the opportunities of service being less numerous, but they remain in existence ready for work if called upon. The Commission expresses its indebtedness to the valuable information submitted to them by the committees in reply to their inquiries for much that is contained in the present report.

A Statistical Survey.

In an appendix to the report is a comparative statement of voluntary hospital accommodation at the date of the Commission's survey in 1924 and at Dec. 31st, 1926.

Table showing Voluntary Hospital Accommodation in 1924 and at the end of 1926.

Area.	Bed accommodation, 1924.	Additional beds stated to be required, 1924.	Bed accommodation, 1926.	Increase.	Additional beds in course of provision at Dec. 31st, 1926.
Bedfordshire ..	159	30	159	Nil.	—
Berks., Bucks., and Oxon.	1,054	207	1,170	116	42
Birmingham ..	1,429	874	1,560	131	98
Bristol	927	148	932	5	—
Cambridgeshire ..	190	10	190	Nil.	—
Cheshire	1,273	351	1,350	77	21
Cornwall	299	40	327	28	13
Cumberland and Westmorland ..	387	86	435	48	—
Derbyshire	1,018	135	1,078	60	—
Devon	826	118	878	52	78
Dorset	351	51	383	32	66
Durham Co. ..	915	422	1,070	155	99
Isle of Ely	35	No return.	50	15	—
Essex..	469*	193	595	126	32
Gloucestershire ..	559*	33	591	32	32
Herefordshire ..	183	—	199	16	—
Hertfordshire ..	445	55	583	138	—
Huntingdonshire ..	62	—	62	Nil.	—
Kent	1,412	364	1,507	95	—
Lancashire	2,435	599	2,603	168	238
Leicestershire and Rutland	565	96	571	6	—
Lincolnshire ..	542	138	570	28	—
Liverpool	1,377	651	1,475	98	51
Manchester	1,847	622	1,907	60	38
Middlesex	271	40	331	60	10
Norfolk	582	100	643	61	—
Northamptonshire ..	321	42	340	19	—
Northumberland ..	1,027*	271	1,120	93	6
Nottinghamshire ..	649	286	748	99	75
Soke of Peterborough	69	31	75	6	—
Plymouth	325	99	334	9	—
Portsmouth	224	60	244	20	—
Salford	290	108	293	3	—
Sheffield	859	523	940	81	70
Shropshire	320*	85	325	5	—
Somerset	884	107	919	35	65
Southampton Co. ..	1,210*	415	1,300	90	63
Staffordshire ..	1,300*	555	1,329	29	159
Suffolk	530*	159	568	38	—
Surrey	696*	273	849	153	38
Sussex East	868	163	918	50	—
Sussex West ..	203	17	203	Nil.	14
Warwickshire ..	550	119	655	105	31
Isle of Wight ..	255	No return.	266	11	—
Wiltshire	370	176	371	1	8
Worcestershire ..	468	40	515	47	—
Yorkshire :—					
E. and W. Riding	3,098	1,120	3,317	219	429
N. Riding ..	382	50	467	85	15
WALES.					
Glamorgan	1,128*	794	1,311	183	20
Monmouthshire , ..	427	142	468	41	23
North Wales ..	452	155	611	159	—
South Wales.. ..	282	11	326	44	—
Total for England and Wales (excluding London)	36,799*	11,164	40,031	3,232	1,834
London	13,880*	2,088	14,477	597	1,130
GRAND TOTAL ..	50,679*	13,252	54,508	3,829	2,964

* Figures revised since the previous report was issued.

Hospitals and Motor Accidents.

The Commission agrees with the view expressed by many authorities that the increasing frequency of motor accidents is placing a heavy burden on many hospitals. This charge ought not, it thinks, to fall upon funds derived largely from the generosity of the charitable, whose gifts are intended for the relief of persons who have not the means to provide institutional treatment at their own cost. While the possession of a motor is very far from being evidence of affluence, those who can afford to maintain a car would suffer no hardship if by some system of

compulsory insurance they were required to pay the premium, probably comparatively small, which would be needed to cover the treatment of their own injuries as well as those which may be caused to others. The incidence of this burden is very unequally distributed, and it falls with special severity on the hospitals which are situated on or near those new roads whose excellence from an engineering point of view affords a seemingly irresistible temptation to excessive speed. The proposal would involve legislation, possibly of a controversial character, but the Commission can see no other way of imposing the charge on those by whom in equity it should be borne.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Cost of Medical Study.

Dr. Hadrich, secretary to the Leipziger Verband, estimates the cost of lectures for the five theoretical terms of study at M.875 (£44), and for the six clinical terms at M.1800 (£90). The expenses of living as a student for five and a half years, excluding clothes and with some assistance from scholarships, he puts at M.2805 (£140). Fees for the State examination (£17), books and instruments (£28), the cost of taking the M.D. degree, with printing of the dissertation (£30), bring the total cost of the study to M.6988 (£349). The expenses of starting practice are estimated at £250 to £500, including furniture, and a further £35–£60 has to be found for instruments. The cost of keep during the university vacations and of clothes are not included in the above figure. The expenses may be lessened if the lecture fees are deferred, and if advantage is taken of certain privileges of students, but this is possible only for students who prove especially able. After having settled, the medical man must wait some years before being admitted to club practice which for the average doctor is the basis of his livelihood. All things considered, there is little hope of his paying at an early date the debts he may have incurred for medical education.

Professional Secrecy.

Some time ago, in the course of a demonstration, a university teacher mentioned the name of the man whose body was being dissected. This man, who had died in prison, had been found guilty in a financial scandal which had caused a great sensation, and the professor, in commenting on his character and behaviour, produced evidence that he had suffered from syphilis. The newspapers having reported the incident, the Minister of Public Instruction, who is responsible for university affairs, has written a letter to the professor blaming him for having acted against the rules of professional secrecy which are valid not only for practitioners but also for pathologists. Disciplinary measures have not been taken because the professor is in any case about to vacate his chair on account of age.

The Guttadiaphot.

At the Berlin Medical Society Prof. Victor Schilling, the well-known author of several works on diseases of the blood, has been demonstrating an apparatus for hæmatological research, devised by two medical men of Hanover, Dr. Meyer and Dr. Berast, and tested by himself. The principle of the apparatus, which is called the guttadiaphot, is that a drop of blood absorbed by blotting paper impregnated with certain chemicals assumes various appearances in various diseases; thus the appearance differs in syphilis, septicæmia, and tuberculosis. The edge of the drop shows in some diseases a corona, whilst in others there is none; also the staining of the centre is characteristic in different pathological conditions. In syphilis the results of the guttadiaphot test accorded with those of the Wassermann reaction.

Forthcoming Conferences.

A meeting of the Society for the Study of Diseases of Digestion and Metabolism will take place in Amsterdam from Sept. 12th to 14th. The physiology and pathology of hunger, the relation between the digestive tract and blood diseases, and the avoidance of errors in diagnosis and treatment of diseases of digestion will be the principal subjects of discussion. An exhibition of pharmaceutical preparations is being arranged. Further particulars may be obtained from the general secretary, Prof. von den Velden, Bamberger Str. 49, Berlin W. 30.

The eighth meeting of the German Pharmacological Society will be held from Sept. 12th to 15th in Hamburg, in the rooms of the Pharmacological Institute. On Sept. 13th, in the morning, a symposium on the functions of the heart and blood-vessels will be given, in honour of William Harvey. The physiological and pharmacological aspects will be discussed by Dr. Liljestrand, of Stockholm, and Dr. Jarisch, of Innsbruck; the pathology of cardiac function, by Dr. H. Straub, of Göttingen; and the pathology of the vascular system, by Dr. Eppinger, of Freiburg. The afternoon will be devoted to addresses by Dr. G. V. Anrep (Cambridge) and Dr. G. Mansfeld (Pécs) respectively, on new studies in the physiology and pharmacology of the coronary arteries, and on the problem of dilatation of the heart. On Sept. 14th industrial poisoning will be discussed, from the toxicological standpoint, by Dr. Flury, of Wurzburg, and from the hygienic standpoint by Dr. Zangger, of Zurich. On Sept. 15th Prof. G. Barger, of Edinburgh, will give an address on the active principles of ergot. A detailed programme will be issued in July. Those who wish to give communications are asked to apply to the President, Prof. G. P. Pick, 13A, Währingerstrasse Vienna IX, before the end of June.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

Public Health in Hungary.

IN the course of a recent address Dr. George Gortvay, Secretary of State, advocated the establishment of a special commission to study the diet of the people, and to improve it by promoting the consumption of vegetable proteins, fruit, and milk, in place of the almost exclusive consumption of carbohydrates and fat. The Magyar peasant, when at work, he said, eats bacon and bread four times a day.

Referring to the vital statistics of the Hungarian people, Dr. Gortvay stated that the increase in population in some counties—mainly in those where most of the population consisted of small industrial workers and agricultural labourers—was gratifying, but that in others the birth-rate lagged behind the death-rate. To combat the "one-child" system, he suggested that the State should colonise the "one-child" districts with "many children" families, for he considered that the psychologically and bodily degenerate inhabitants of the "one-child" districts were already past saving. Similarly, in the fight against alcoholism, it was not nearly so important to deal with 200 or 300 unfortunate chronic drunkards as to inculcate a distaste for alcoholism in the younger generation as a whole. In the campaign against artificial abortion, he did not seek the remedy in the introduction of severer penalties, but in the compulsory notification of all cases of pregnancy. Physicians and midwives should be obliged to report every case of pregnancy to the medical officer of the town and it should be his duty to see that the pregnant woman obtained moral and financial support. Speaking of the infant mortality in the low-lying districts, Dr. Gortvay said that it was a real catastrophe that in these areas the death-rate among new-born children should be from 30 to 40 per cent. Cancer had shown an increase of 25 per cent. since 1922, and twice as many people died as a result of rheumatic diseases as from infectious diseases. In 1925 there were 4000 cases of enteric fever—a wholly preventable disease—1086 of which were fatal.

The increase in the death- and sickness-rates meant a very large addition to the national expenditure, and Dr. Gortvay exhorted the medical societies of Hungary to deal more vigorously with the problem of prophylaxis, in which they must secure the coöperation of the nation and the community.

Medical Periodical in Four Languages.

A new medical journal, the *Monatsschrift Ungarischer Mediziner*, has been launched in Budapest under the able editorship of Dr. I. E. László. The object of this periodical is to make the progress of the Hungarian medical and scientific world known to foreign countries. The journal appears in German, English, French, and Italian.

International Congress on Industrial Hygiene.

Since 1913 no international medical congress has been held in Budapest. It is not surprising, therefore, that the preparatory committee of the Congress on Industrial Hygiene, to be held from Sept. 28th onwards, should be doing everything in its power to draw up a very interesting programme. Prof. Tibor Györi, president of the organising committee, has asked all the native representatives of medical and sanitary science, and a number of distinguished foreign pioneers of industrial hygiene, to read papers and give addresses; up to now more than 20 foreign experts have declared their willingness to take part, while 45 will give lectures. Nicholas Horthy, Governor of Hungary, has been asked to be patron of the Congress, and the Minister of Public Welfare has decided to arrange, in conjunction with the Congress, an exhibition of appliances for the protection of workmen, and of instruments used in industrial hygiene. Information may be had from the office of the Congress,[1] Népegészségügyi Muzeum, Eötvös-street 3, Budapest, VI.

Medical Journal Abused by an Advertiser.

Not long ago some astute pharmaceutical manufacturers tried to bring grist to their mill by sending out circular letters containing articles, or extracts from articles, from respectable medical journals, the suggestion being that the use of these paragraphs would be approved by the papers in question. Last winter the *Orvosi Hetilap*, the leading Hungarian medical paper, sued a pharmacist for an offence of this kind. The court sentenced the offender to a very heavy fine, and compelled him to send the sentence, which occupied about four printed pages, to all medical men to whom the objectionable advertisement had been forwarded, and to publish it in full in all Hungarian medical journals. In spite of this another breach of the same kind was discovered last week. A manufacturing chemist of Ujpest sent a circular advertisement, in the form of a small booklet, to doctors and pharmacists under the title "Scientific Publications of the *Orvosi Hetilap*." The booklet contained extracts from, and summaries of, articles on different diseases, published in the *Orvosi Hetilap* in 1926, emphasising the efficacy, in general, of some ordinary well-known and old-established drugs, as for instance, iodine, guaiacol, and salicylate of soda. The firm exploited these by recommending its specialty, a patent medicine, which contained, among other things, iodine and guaiacol, and the advertisement was so framed as to make it appear that the articles in the journal bore witness to the efficacy of this patent medicine. The editors of the paper have taken legal proceedings against the offenders. It is to be hoped that in this case the sentence of the court will be even severer than that inflicted on the former occasion.

A Tribute to Harvey.

A recent number of *Orvoskepzes*, a bi-monthly journal, issued by the Central Committee for Post-graduate Medical Teaching, is dedicated to the memory of William Harvey. The number contains several illustrations, and includes a paper, in English, by Prof. Emile Grosz, president of the Central Committee for Post-graduate Medical Teaching, who gives a short sketch of Harvey's life and an appreciation of his work, ending with the statement that he played the same rôle in medicine as was played in astronomy by Copernicus, Newton, and Kepler.

[1] Or in England from the Hon. Foreign Secretary of the Council of Industrial Medicine, 12, Stratford-place, London, W.1.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Debate on Public Health Work in the Dail.

ON the vote for the Department of Local Government and Public Health recently in the Dail, several deputies took occasion to discuss matters affecting public health. Mr. S. T. O'Kelly (F.F.) drew attention to the absence of any references to the recommendations in the report of the Commission on the Poor Laws. The Government had not given the lead it should in health work and was to blame for the backward condition of child welfare work. The sanitation of small towns was not receiving proper attention. The housing policy of the last five years had left Dublin with an increased slum population. Sir James Craig (Ind.) asked for information as to the number of counties that had made provision for the appointment of medical officers of health, and as to the progress of the scheme of medical inspection of school-children. Poor people had great trouble in having their vision tested. Dr. O'Dowd (F.F.) suggested that sanitation should be tackled in the same way as the road question had been tackled. He thought that county homes should be turned into proper hospitals, and that in every county hospital there should be a surgeon who was able to undertake all classes of general surgical work. Mr. Corish (Lab.) said that the officials of the Department had a good progressive outlook, and if there were enough money available many of the things complained of would doubtless be remedied. They had arrived at a stage, however, when there should be Government intervention to get even a few of the towns and villages into a proper sanitary condition. Several deputies joined in the demand for increased housing and improved sanitation.

Memorial to Dr. McKisack.

A meeting of subscribers to the memorial to the late Dr. H. L. McKisack was held at Belfast on June 1st, with Mr. T. S. Kirk in the chair. Mr. Edwin D. Hill and Mr. Stanley Ferguson, the hon. treasurers, reported that the total subscriptions received to date amounted to the sum of £555 9s. It was unanimously agreed: (1) That a bronze memorial tablet in memory of the late Dr. McKisack be placed in the hospital, this to be paid for out of capital. (2) That the rest of the capital be made the nucleus of a McKisack Research Fund, the income of which to be devoted to the study of disease, injuries, and deformities in all their aspects, including the study of the results of treatment. (3) That the fund be kept open for future donations, with no limitation as to the amounts. (4) That the fund be in the keeping of, and administered by, the Board of Management of the Royal Victoria Hospital, Belfast, on the recommendation of the visiting medical staff of the hospital. It was further decided that the details of carrying out the terms of these resolutions should be left in the hands of the following committee: Mr. T. S. Kirk, Mr. Hill, Mr. Ferguson, Dr. Robert Marshall, and Dr. Andrew Trimble.

KING EDWARD VII. HOSPITAL, WINDSOR.—At the annual meeting it was stated that in addition to replacing the two wards recently burned, further extensions are necessary. More beds for women and children are needed as well as better accommodation for nurses and more room for out-patients. In one day 43 accident cases were taken to the hospital, and a large proportion of the injured persons had to be detained as in-patients.

MEDICINE AND THE LAW.

Criticisms of the Coroners Acts.

Two criticisms have recently been directed against the existing law of coroners' inquests. One was a complaint by the West London coroner of the protracted adjournments of the inquisition upon the death of Mr. A. C. B. Webb, who was shot at his flat in Bayswater in February last. Mr. H. R. Oswald pointed out that, owing to the length of the parallel proceedings in the criminal courts, the inquest had been three times adjourned. Frederick Stewart having been condemned to death for the murder of Mr. Webb, and his appeal against conviction having been dismissed on May 21st by the Court of Criminal Appeal, the West London coroner has now formally recorded a verdict of "murder" against him. Mr. Oswald's point is that, if the amending Act of 1926 had not been passed, the coroner's jury could have made up its mind upon the case at its second sitting; the 1926 amendment of the law was supposed to save public expense and to prevent the simultaneous inquiry by two courts; in this particular instance, however, the expense has actually been increased, and the diminution of the coroner's jurisdiction has proved no economy at all. Section 20 Subsection (6) of the 1926 Act makes it clear that the coroner's adjournment in such a case should be to such a date as will cover the final disposal of a possible application to the Court of Criminal Appeal. The terms of the section have rightly been regarded as deprecating an indefinite adjournment *sine die*; but, if the concurrent criminal jurisdiction is drawn out for so long as three months, it may prove the most convenient course to adjourn the inquest without naming a date.

While many regret that the coroner's inquest should have been deprived of an important part of its jurisdiction in this manner in 1926, the other recent criticism comes from quite another side, and suggests that the coroner's jury should not be pressed to return a verdict of guilty against any named person. Mr. H. A. Hollond, of Cambridge University, has written to the *Times* to deprecate the procedure in the inquest upon the body of Harry Pace (reported in the *Times* of May 23rd). The jury first reported its opinion that the case called for further consideration. The coroner was then obliged to remind them that, if they wished proceedings to be taken, they must name the person or persons. The jury thereupon revised its verdict and returned the finding that Harry Pace met his death by arsenical poisoning administered by Beatrice Annie Pace. This, says Mr. Hollond, is a breach of the good English rule that an accused person is treated as innocent until proved guilty. The relevant statutory provision is Section 4 Subsection (3) of the Coroners' Act of 1887, which enacts that the jury, after hearing the evidence, must give their verdict, and must set forth (so far as the particulars are proved) various matters, including, in cases of murder or manslaughter, the persons (if any) whom they find to have been guilty. The statute here does little more than repeat the ancient duties of the jury to be traced in the famous enactment *De Officio Coronatoris*, and unless the coroner's inquest is to be deprived yet further of its powers as a part of the machinery for setting the law in motion against a possible murderer, there seems no reason why the substance of the law should be changed. Mr. Hollond complains that the fact of the jury's finding against Mrs. Pace will stand recorded in all the newspapers of the country, though she has not been tried and though she is entitled at this stage to be treated as innocent. He would presumably be satisfied if the inquest in such cases merely committed a person for trial, instead of recording an actual verdict of guilty. The primary object of an inquest is to determine the cause of death, but any change in the law would cut very deep into the roots of the past; the chances of such a change being made depend upon the extent to which public opinion is aroused.

Forged Certificate of Chemist's Qualification.

Ralph Valentine Edwards was sentenced last week to six months' imprisonment with hard labour for attempting to obtain a week's wages as superintendent chemist by false pretences. He appears to have represented to an Albany-street chemist that he was a qualified chemist, and to have produced in support of his statement (though he denied having done so) a tracing of a certificate of qualification by the Pharmaceutical Society, so skilfully done that it was thought to be a photograph of an original certificate. A detective-sergeant said that on April 29th Edwards was bound over at the London sessions for two years on a charge of possessing cocaine and morphine. He had then obtained a situation by means of a forged certificate. Morphine and cocaine were found in his possession and the police described him as a drug addict. Mr. Hay Halkett, in passing sentence at Marylebone police-court, remarked that the accused might have poisoned the whole of Albany-street.

Milk Frauds and Habitual Offenders.

Under the heading "Dairyman Imprisoned" the suggestion was made, on p. 1140 of THE LANCET, that habitual offenders might with advantage be debarred from taking any further part in the sale of food. In a letter printed on p. 1201, Prof. H. Kerr, of Newcastle-upon-Tyne, courteously points out that Section 2 of the Milk and Dairies (Amendment) Act of 1922 enables local authorities to remove from the register of persons registered as retail purveyors of milk any one who is convicted of a milk offence. This power of removal from the register is of course a most material remedy and deserves widespread publicity. It is given by Parliament in almost every case where compulsory registration or licensing is required, whether for milk-selling, motoring, money-lending, or other matters. But what was suggested in this column was something wider. The habitual offender, if removed from the register of milk retailers, may take up the sale of meat, fruit, or vegetables, or other kinds of food, or he may continue in some subordinate position in the milk trade. It is not enough to strike a man off the register; his further employment —as the solicitors' profession has discovered—may be dangerous. A man who will persistently swindle the public over the sale of milk is not to be trusted in the sale of any kind of food whatever. Our ancestors in robuster times might have held such a man up to public contempt by putting him in the stocks; for many offences the punishment of branding remained upon the statute book until almost modern times, so that honest citizens might know the man with whom they had to deal. Even to-day it is possible—e.g., under Section 47 of the Public Health (London Act) of 1891—to order the posting-up on his premises of particulars of the conviction of a man who has twice in the year been convicted of selling unsound food. If offenders have no conscience towards the public in matters of health, a certain vindictiveness of punishment may be deemed justifiable.

CHILDREN'S HOSPITAL, BRIGHTON.—During their visit to Brighton on May 30th the Duke and Duchess of York opened a new wing at the Royal Alexandra Hospital for Sick Children in Dyke-road. The new wing provides accommodation which has been badly needed. On the ground floor is a room for ultra-violet ray treatment and a receiving room for new cases. On the floor above is an operating theatre, fitted with the most modern light appliances, and, adjoining it, a dark theatre equipped for the examination of defective eyes and ears. On the same floor is an anæsthetic room, and at the top of the building are flats for the accommodation of resident medical men. A large lecture hall has also been built over the out-patients department. Their Royal Highnesses, on the same day, also visited the Prince Albert Convalescent Home at Worthing.

GENERAL MEDICAL COUNCIL.

SUMMER SESSION, 1928.

PENAL CASES.

MONDAY, MAY 28TH.

Improper Contributions in the Lay Press.

The Case of Reginald Francis Edmund Austin, registered as of 41, Wimpole-street, W. 1, M.R.C.S. Eng. 1891, L.R.C.P. Lond. 1891, who appeared before the Council on the following charge:—

"That, being a registered medical practitioner, you have sought to attract to yourself patients and to promote your own professional advantage by means of an article upon appendicitis written by you and published in the number for December, 1927, of the magazine *Health and Efficiency*, in which you extolled your own methods and depreciated those of other practitioners."

Mr. O. Hempson, in opening the case for the complainants, the Medical Defence Union, explained that his society had made this report because it deprecated the increasing tendency of practitioners to communicate articles on medical matters to the lay press. Before reading the offending article he commented on general aspects of the case. A man must, to a certain extent, be judged by his associates, and a glance at the pages of this periodical showed a succession of advertisements commending so-called "cures." The tendency throughout the paper was to attract patients to the exponents of these "guaranteed cures," and away from the qualified medical profession. A man who published an article in any journal ought first to acquaint himself with the nature of that journal, and Dr. Austin must have known what this one was like, for he had been asked to write a series of articles for it, and had been introduced to its readers in the April number in the following words:—

"It gives us the greatest pleasure to announce an important series of articles on the Nature Cure from the accomplished pen of Major Reginald F. E. Austin. . . . The nature cure is come, just as surely as the drug and serum superstition is bound to go, and among the enlightened band of medical men who are advocates of a saner medical treatment, none holds a more distinguished place than Major Austin."

Mr. Hempson did not suggest that Dr. Austin was in any way responsible for this eulogy, but he must have had his attention drawn to it, and it was his duty to keep a closer watch on the paper than he had.

The article (copies of which were circulated to members of the Council) was headed "Nature Cure Explained. The Truth about Appendix Operations. An Insane Medical Craze Exposed. By Major Reginald F. E. Austin, M.R.C.S., L.R.C.P." Inset was a portrait of the late Miss Florence Mills (the leader of the famous Blackbird company of negro actors) with the caption "Yet another victim of operation for appendicitis." The Union accepted the respondent's statement that these embellishments, except for "Nature Cure Explained" and his name, were not Dr. Austin's work, but this fact afforded small justification. The editor reserved the right to make minor alterations, and had presumably already exercised it in the earlier articles. Surely respondent should insist on seeing his work in its final form before publication.

Mr. Hempson read the article, commenting especially on certain phrases. The opening paragraphs were written largely in the first person: "Frequently I am asked the question . . . invariably my answer is . . . I would not advise . . . In no case has life been lost by my patients, even in gangrenous and pus cases"; all of which was in the traditional manner of the "guaranteed cure." Dr. Austin had quoted, in denouncing the operative treatment of appendicitis, the "chestnut" about the surgeon who operated on a patient who had a 100 guineas; nothing more insulting to his profession could be imagined than the introduction of that anecdote into an article of this kind. Another offensive phrase was "The (germ) theory is popular because it absolves us from all responsibility for our troubles; hence most writers on appendicitis play to the gallery, but ingenuously give themselves and the germ theory away." It constituted a strong disparagement of the profession as a whole. Mr. Hempson was not discussing the merits of respondent's methods, but his manner of presenting his criticism, and his unjustifiable suggestion that the advocates of other methods were dishonest. Another passage to which the Medical Defence Union objected especially was, "All cases which rupture into the abdominal cavity are caused by the doctor himself in his efforts to make a diagnosis." The article concluded with the description of a case successfully treated by the writer. On another page of the issue there was an editorial comment on the article. The editor had accepted respondent's disparagement of his professional colleagues, and this comment, Mr. Hempson submitted, was the direct outcome of the article. It was headed "Do Have a Taste of Our Nice Cold Steel," and attacked surgeons in general as "apostles of the knife," who conducted energetic and insidious propaganda in the daily press to enrich themselves and gratify a mania for operations akin to the lust of the vivisector for experimenting on living animals. Nothing could more clearly point out how pernicious were articles like Dr. Austin's. Mr. Hempson then read extracts from the advertisement pages to illustrate the extent to which they were used by unqualified medical practitioners.

Respondent, in evidence, said that he had been practising "nature cure" methods for 20 years. He had from time to time contributed articles and letters to the medical press of India and this country, mostly on "nature cure" methods. The present series, however, with the exception of a few letters, was the first work he had ever contributed to the lay press. His remarks about treatment were the absolutely sincere expression of his own views; he was sorry if he had given the impression that he wished to attack professional colleagues. In answer to the Legal Assessor, he said his original heading had been "The Appendicectomy Insanity"; he had used the word insanity in a moderate sense, as he would in criticising any current craze. He had interviewed the editor and protested at the alterations and the portrait of Miss Mills. None of the previous articles in the series had been illustrated, and he had had no reason to suppose that the editor would insert a picture and a caption of this kind. No proofs had been sent him, and he had known nothing about the editorial until the magazine had appeared. He had had no intention of commending his own personal treatment, but only that carried out by the body of "nature cure" practitioners, of which he was one. None of his former articles mentioned his patients. Cross-examined, he stated he had intended to disparage not men, but methods; he had thought the "chestnut" about the surgeon was a very innocent one, and respondent had seen it in medical journals. He believed that all his professional brethren who did the appendix operation honestly believed it to be necessary. He had seen many cases of ruptured appendicular abscess, all of which, in his opinion, had been caused by palpation; this was the fault of the method. He admitted having read through the advertisements in the paper, which he had taken in. He had not approved of the editorial, but had been powerless to stop it. He had interviewed the editor before the British Medical Association had written to him, as some lay friends had represented to him that the article was unfortunately expressed. Dr. Austin's counsel read a statutory declaration from the editor of *Health and Efficiency*, in which it was stated that the articles would not have been published without Dr. Austin's name at the head. No proofs had been submitted. The editor reserved the right to edit articles without

asking their author's opinion. The photograph and caption had been inserted unknown to respondent, who had remonstrated with the editor after the publication of this issue.

Respondent's counsel, in his address, expressed his client's great regret that he should have, quite unintentionally, expressed himself in a way that went beyond the canons of good taste and professional practice. Dr. Austin, as an earnest of his sincerity, wished to give the Council his solemn promise that he would contribute no further articles to the lay press.

Mr. Hempson submitted that his society were content to lay the facts before the Council, and did not wish to press the charge unduly. The Council found that the facts amounted to infamous conduct in a professional respect, but postponed judgment for 12 months, subject to the usual conditions.

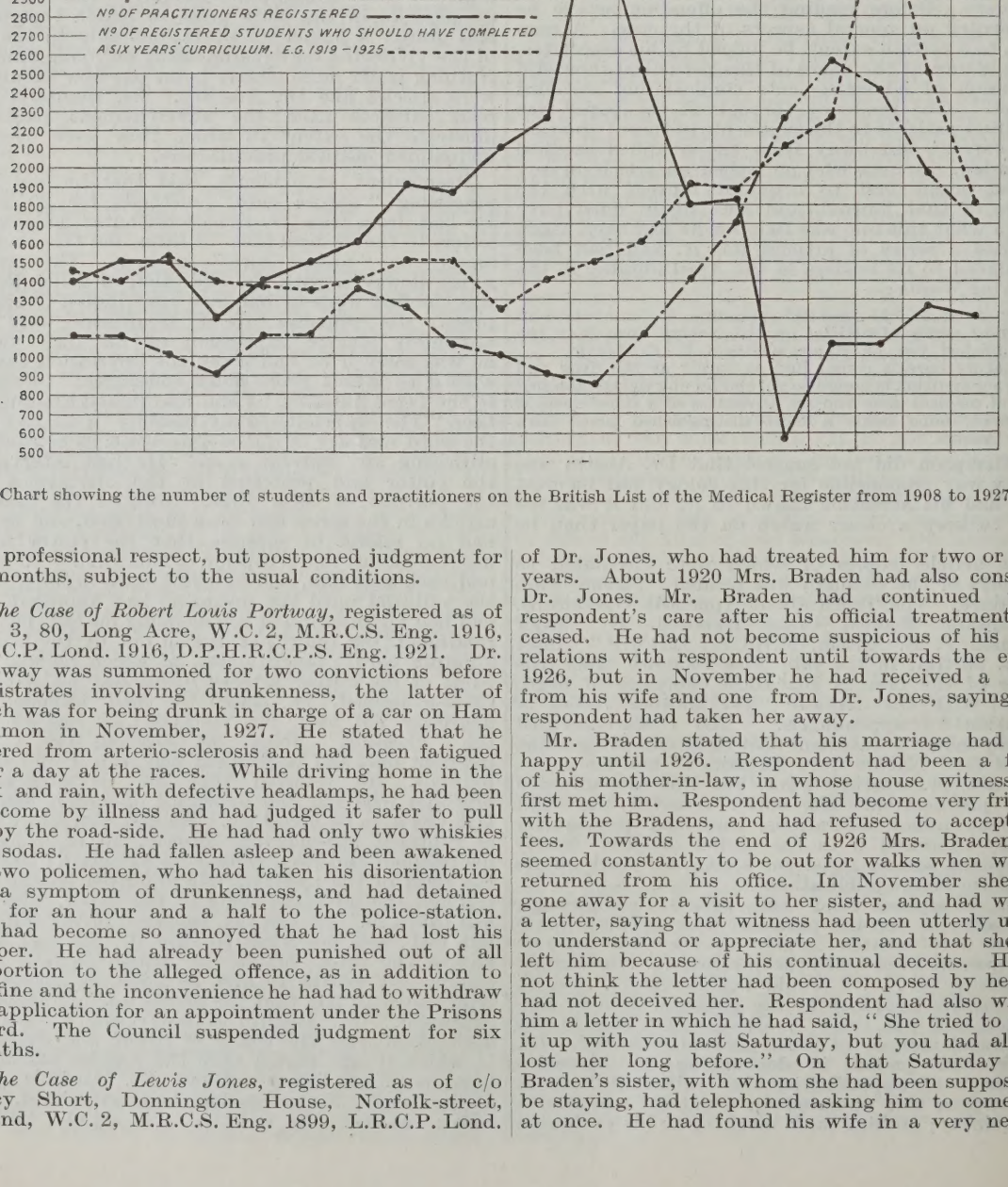


Chart showing the number of students and practitioners on the British List of the Medical Register from 1908 to 1927.

The Case of Robert Louis Portway, registered as of Flat 3, 80, Long Acre, W.C. 2, M.R.C.S. Eng. 1916, L.R.C.P. Lond. 1916, D.P.H.R.C.P.S. Eng. 1921. Dr. Portway was summoned for two convictions before magistrates involving drunkenness, the latter of which was for being drunk in charge of a car on Ham Common in November, 1927. He stated that he suffered from arterio-sclerosis and had been fatigued after a day at the races. While driving home in the dark and rain, with defective headlamps, he had been overcome by illness and had judged it safer to pull up by the road-side. He had had only two whiskies and sodas. He had fallen asleep and been awakened by two policemen, who had taken his disorientation for a symptom of drunkenness, and had detained him for an hour and a half to the police-station. He had become so annoyed that he had lost his temper. He had already been punished out of all proportion to the alleged offence, as in addition to the fine and the inconvenience he had had to withdraw his application for an appointment under the Prisons Board. The Council suspended judgment for six months.

The Case of Lewis Jones, registered as of c/o Percy Short, Donnington House, Norfolk-street, Strand, W.C. 2, M.R.C.S. Eng. 1899, L.R.C.P. Lond. 1899, who appeared before the Council on the following charge :—

"That, being a registered medical practitioner, you abused your position by committing adultery with Alice Mary Braden, a married woman, with whom and whose husband you stood in professional relationship, of which adultery you were found guilty by the decree of the Probate, Divorce, and Admiralty Division (Divorce) of the High Court of Justice, dated June 2nd, 1927, and made absolute on Dec. 12th, 1927, in the case of Braden *v.* Braden and Jones, in which you were the co-respondent. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect."

The facts, as stated by the Council's solicitor, were that Mr. Braden was married in 1918, and that in 1919 he had been discharged from the Army as unfit. The medical board had placed him under the care of Dr. Jones, who had treated him for two or three years. About 1920 Mrs. Braden had also consulted Dr. Jones. Mr. Braden had continued under respondent's care after his official treatment had ceased. He had not become suspicious of his wife's relations with respondent until towards the end of 1926, but in November he had received a letter from his wife and one from Dr. Jones, saying that respondent had taken her away.

Mr. Braden stated that his marriage had been happy until 1926. Respondent had been a friend of his mother-in-law, in whose house witness had first met him. Respondent had become very friendly with the Bradens, and had refused to accept any fees. Towards the end of 1926 Mrs. Braden had seemed constantly to be out for walks when witness returned from his office. In November she had gone away for a visit to her sister, and had written a letter, saying that witness had been utterly unable to understand or appreciate her, and that she had left him because of his continual deceits. He did not think the letter had been composed by her; he had not deceived her. Respondent had also written him a letter in which he had said, "She tried to patch it up with you last Saturday, but you had already lost her long before." On that Saturday Mrs. Braden's sister, with whom she had been supposed to be staying, had telephoned asking him to come over at once. He had found his wife in a very nervous

condition, and after an interview of two or three hours she had confessed to misconduct with Dr. Jones. He had forgiven her, but said he could not take her back home immediately. She had, however, come to the train by which he was leaving, and he had taken her back. She had told his mother everything, and a very distressing talk had followed, at the end of which she had left to go to her mother's. From there she had gone to live with Dr. Jones. Witness produced some medicine bottles inscribed to himself and his wife, which he said had been sent by Dr. Jones shortly before his wife left him. He had been asked by the Council to give evidence, and had no vindictive feeling towards respondent. He denied having made his wife unhappy. Cross-examined, he admitted having met Dr. Jones socially before he came under his treatment. He and his wife had only quarrelled once about other women, and then only for a short time. He had once asked her mother to take her back for a few months, believing that after as much as nine years of married life it was good for a couple to separate for a little. His wife had occasionally visited a Dr. Jessie Maxwell, but Dr. Jones was primarily her medical attendant. She had only gone to Dr. Maxwell after she had become very friendly with Dr. Jones. Dr. Jones had treated her the week before she had joined him. He admitted he had struck his wife in the face, but that had been in the course of the quarrel after he had taken her back and forgiven her. In answer to the Legal Assessor, witness stated that up to 1926 Dr. Jones had treated his wife more or less regularly two or three times a year. Dr. Jones had been paid by the Ministry of Pensions for witness's treatment, but had never sent in any accounts for his wife or his father.

Respondent, in evidence, said he had never attended Mrs. Braden professionally. The most he had done was to give her an aspirin once or twice. He had never attended Mr. Braden except under the Ministry of Pension's scheme. He had called frequently at the house, but only socially; he had taken Mrs. Braden out motoring every Saturday. The bottles marked with Mrs. Braden's name had been taken back to Mr. Braden's house by Mrs. Braden from Richmond, where she was staying with witness. She had had a cold, and had gone back to her husband's house once or twice. He denied having broken up Mr. Braden's home. Even in 1925 Mr. Braden had told him he was in love with another woman.

Mrs. Braden corroborated Dr. Jones's evidence; the bottles had been labelled with her name to allay suspicion. She had been treated by Dr. Maxwell for 14 weeks.

The Council decided that the facts had not been proved to their satisfaction, and dismissed the case.

The Case of Samuel Nagley, of 169, High-street, Homerton, E. 9, was postponed until the Council's next session, owing to the ill-health of the complainant.

FRIDAY, MAY 25TH: COMMITTEES.

Dr. D. J. Coffey, President of the Irish Free State Medical Council, was elected a member of the Penal Cases Committee. By an agreement between this country and the Free State, it is laid down that all penal cases referring to Irish practitioners on the English register shall be reported to the Irish Council, and that the Irish Council shall report all its penal cases to the General Council, so that double prosecution may be avoided. The presence of Dr. Coffey on this committee will ensure an adequate liaison between the disciplinary proceedings of the two Councils.

Finance.—The receipts from registration fees have decreased in England by £655, in Scotland by £302, and in Ireland by £500. The report includes a graph (given herewith) of the numbers of students and practitioners registered in each year since 1900; from this it appears that the falling-off due to the 1923 Regulations should continue for another two or three years.

Public Health.—As five years have now elapsed since the new rules came into force, the Council will now begin to inspect the examinations held by the licensing bodies for the Diploma of Public Health.

The London Conjoint Board wrote to the Council in November, 1927, to inquire whether the 120 hours' parasitology included in the five months' course at the London School of Hygiene could be accepted as reducing in any way the 180 hours of bacteriology and parasitology required for admission to Part I. of the D.P.H. The Committee, in a memorandum answering the Board's question, pointed out that the two courses had different aims in view, and that the dissimilarity between them would grow as time went on. Moreover, if partial exemptions were to be granted readily, the length of the curriculum would be gradually reduced; this would be a retrograde step. The Committee therefore, while willing to consider any case on its merits, found themselves unable to grant any general exemption.

Pharmacopœia.—The sale of the British Pharmacopœia continues to increase, the total number of copies sold since May, 1927, being 2476. The Chairman of the Committee, Sir Donald MacAlister, referred at length to the work of the Subcommittee of the Committee of Civil Research (on the findings of which we commented in a recent issue[1]). The Council accepted the Committee's recommendations, thanking the Lord President for the report and approving the changes recommended in its conclusions, and authorised the Committee to take on the Council's behalf all necessary steps to carry them into effect.

The Council acceded to the request of *Harold Dearden*, M.R.C.S. Eng. 1911, L.R.C.P. Lond. 1911, to have his name removed from the Register on the grounds that he had ceased to practise.

[1] THE LANCET, May 26th, p. 1078.

ROYAL FREE HOSPITAL. — The one-hundredth annual report records that the average total weekly cost of each in-patient has fallen from £4 6*s*. 5*d*. to £4 2*s*. 0½*d*.; at 1*s*. 9⅝*d*. the cost of each out-patient attendance shows a fall of a fraction over a penny. These reductions have been achieved notwithstanding a general improvement in the dietary. The hospital is deriving an income of £4000 a year under the Inland Revenue arrangement which enables a subscriber, on certain conditions, to obtain a reduction of income- or super-tax. A reference to recent donations to the hospital will be found on p. 1188.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Monday, June 11th, at 10 A.M., at the Royal Northern Hospital, Mr. Lane-Roberts will give a clinical demonstration in gynæcology, and on the same date, at 3 P.M., Mr. MacCallan will demonstrate at the Royal Eye Hospital. On Tuesday, June 12th, at 2 P.M., Dr. Anthony Feiling will hold a clinical demonstration at the Hospital for Epilepsy and Paralysis, Maida Vale, W. These demonstrations are open to the medical profession without fee. From June 18th, for a fortnight, special courses will be given at the City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, London, E., and at the Chelsea Hospital for Women. A general practitioners' course will be given at the London Temperance Hospital from June 18th to June 30th, from 4.30 to 6 P.M., and from June 25th to July 21st, at 5 P.M., at the West End Hospital for Nervous Diseases, a course will be held daily consisting of clinical demonstrations on selected cases. The Fellowship also provides a general course of instruction throughout the year which includes attendance at the clinics of the associated hospitals. Comprehensive tickets are issued and arrangements are made for those unable to do whole-time work. Copies of syllabuses and of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship of Medicine at 1, Wimpole-street, London, W. 1.

Correspondence.

"Audi alteram partem."

MULTIPLE MALIGNANT TUMOURS.

To the Editor of THE LANCET.

SIR,—In THE LANCET for May 5th (p. 917) there is a leading article calling attention to the rarity of multiple malignant growths. I have always been of the opinion that multiple cancers are not so rare as is generally stated. I have therefore looked up my recent cases and find that in 310 successive autopsies on cancer patients at the Christie Hospital there occurred 14 undoubted cases of multiple primary malignant growths—i.e., 4·5 per cent., of which the site was as follows:—

1. Male, aged 55. (1) "Large round-celled sarcoma" of testis; (2) squamous carcinoma of peritoneum with secondaries in iliac glands.
2. Male, aged 67. (1) Squamous carcinoma of tongue; (2) columnar carcinoma of gall-bladder.
3. Male, aged 41. Carcino-sarcoma of pharynx: (1) squamous carcinoma arising in an ulcerating (2) spindle-celled sarcoma of the pharynx. Sarcomatous metastases in glands, thyroid, lungs.
4. Male, aged 53. (1) lymphosarcoma of the fourth lumbar vertebra with numerous metastases in glands, lungs, heart, pancreas; (2) one of the metastases in the lungs showed a combined tumour of lymphosarcoma and squamous carcinoma.
5. Male, aged 54. (1) Squamous carcinoma of the bladder; (2) spheroidal carcinoma of the liver.
6. Female, aged 46. (1) Columnar carcinoma of the rectum with metastases in abdominal and cervical glands, liver, ovary, thoracic duct; (2) columnar carcinoma of duodenum, apparently distinct from (1).
7. Female, aged 59. (1) Lymphosarcoma of left kidney and adrenal; (2) spheroidal carcinoma of pancreas with metastases in glands, ovary, thyroid, skull, brain, liver, both kidneys.
8. Male, aged 35. (1) Columnar carcinoma of rectum; (2) spheroidal carcinoma of cystic duct with metastases in glands, liver, spleen, kidney.
9. Male, aged 32. (1) Melanotic tumour of leg with secondaries in groin, abdominal wall, chest wall; in iliac, pelvic, aortic, gastric, and mesenteric glands; also in lungs, heart, both kidneys, brain; (2) large myxosarcoma (not pigmented) of left kidney, measuring $18 \times 7 \times 6$ in.
10. Female, aged 74. (1) Squamous carcinoma of skin of breast; (2) spheroidal carcinoma of the same breast with metastases in stomach, vertebræ, and spinal dura mater.
11. Female, aged 45. (1) Spheroidal carcinoma of breast with metastases in lungs; (2) spindle-celled sarcoma of same breast.
12. Female, aged 52. (1) Squamous carcinoma of tongue keratinising; (2) spheroidal carcinoma of œsophagus with secondaries in mediastinal glands.
13. Male, aged 56. (1) Squamous carcinoma of tongue not keratinising; (2) spheroidal carcinoma of œsophagus with secondaries in liver.
14. Female, aged 41. (1) A mixed columnar carcinoma and spindle-celled sarcoma in the pelvis recurrent from a columnar carcinoma of the ovary which had been removed 18 months previously, with carcinomatous secondaries in iliac, inguinal, and some abdominal glands; (2) spheroidal carcinoma of both breasts with secondaries in axillæ and some abdominal glands.

I have excluded from this list all cases which are reasonably open to doubt, such as one case in which there were two, apparently independent, squamous carcinomata of the œsophagus; five cases of spheroidal carcinoma of both breasts (simultaneous or successive); also a case of multiple spindle-celled sarcoma of both kidneys, and one or two others. During the period covered by these autopsies I have also met with a case (but not at the Christie Hospital) which resembles closely Case 4 in the list. It was a case of lymphosarcoma of the abdominal glands with numerous metastases in the bladder and elsewhere. One of the metastases in the bladder had involved the mucous membrane and showed a combination of lymphosarcoma and squamous carcinoma. I have also met with two cases of carcino-sarcoma and one combined lymphosarcoma and squamous carcinoma of the uterus, but these, being operation specimens, are not included in the list.

The only case in the list which is possibly open to doubt is No. 6. In this there was an ordinary carcinoma of the rectum—partly mucoid—with tall columnar cells. The duodenal growth, which had led to perforation into the peritoneal cavity, was composed of much shorter cells and was almost entirely necrotic. It had quite a different appearance to that of the rectal growth and its numerous metastases. In Case No. 8 the carcinoma of the cystic duct had the structure of a pancreatic growth and may have originated from a heterotopic portion of pancreas in the portal fissure.

There can be little doubt that the frequency with which multiple primary growths are recognised depends to a great extent on the thoroughness with which tumours, apparently secondary, are submitted to microscopic examination. It appears to be usually, but not always, the case that in these cases of multiple primary malignancy one only of the primary growths gives rise to metastases.

I am, Sir, yours faithfully,

CHARLES POWELL WHITE.

Christie Hospital, Manchester, June 4th, 1928.

IS THERE MUCH TUBERCLE IN THE SERVICES?

To the Editor of THE LANCET.

SIR,—The above question is not infrequently asked, but is any answer possible? Very careful calculations must be made before any useful answer can be given. Apparently the only comparison possible will contrast the death-rates in the Services with those of males of similar ages in England and Wales. Statistics of the three Services have been published complete for the four years 1922–23–24–25, so these years were chosen, and their combined death-rates, for tubercle, respiratory, and "other," calculated for males, England and Wales, at each five-year period from 15 to 45. These rates were then applied to a population such as that in each of the Services, and it emerged that if deaths occurred in each service in the same proportion as in civil life, there would, per 10,000 men, be expected in the Army, the youngest in age, from respiratory tubercle, 12·4 deaths, from "other" tubercle, 1·8 every year; in the R.A.F., 12·5 deaths from respiratory tubercle, 1·7 from "other," and in the Navy, in age the oldest, the figures would be 12·8 and 1·6. The civil death-rate from respiratory tubercle increases with age, but that from "other" tubercle diminishes.

Against these figures are to be set those published for these same four years by the Army and the Air Force, and by the Navy for 1925, the first year in which it differentiates both kinds of tubercle. Then we have, per 10,000 men, for the Army, 1·45 and 0·37; for the Air Force, 0·7 and 0·66; for the Navy (one year), 3·4 and 0·6. These are far less than the death-rates expected at civil rates; indeed, if the deaths expected be taken as 100 in each case, the deaths that occurred, expressed as percentages, will be for the Army, 11 and 20; R.A.F., 5 and 38; for the Navy, 25 and 40. Hence it appears that men in the Services had in these years a smaller risk of dying of tubercle than if they had not joined, and particularly in respect of respiratory tubercle, the deaths from "other" tubercle not being equally reduced. In fact, whether because of careful selection or better conditions of life, lodging, food, exercise, or climate, fewer of the 300,000 men in the Services die in any year of tubercle than will die from it in a chance sample of the same number and age in civil life, 100 civil deaths paralleling 16·6 in the Services.

Invaliding, of course, is also to be considered. The invalids of last year were removed from the Service, their deaths, if any, do not fall into the Service statistics, but go to increase the civil death-rate. Doubtless most of them recover, but as no figures

on the point are available, we can only display the tale of invaliding without drawing conclusions. The wastage, then, from tuberculosis, the total of invalids and deaths, per 10,000 men per annum, from each class of case in 1922–25 was: Army, 12·45 and 1·97; R.A.F., 14·0 and 3·82; for the Navy (1925 only), 25·3 and 3·6. Taking the expected deaths again as 100, and expressing these last figures as percentages, we have: Army, 100 and 109; R.A.F., 113 and 224; Navy, 197 and 225. Here, again, we seem to be shown that the Service life protects less against tubercle "other" than against respiratory tubercle, rather contrary to expectation, but this examination only covers, at the best, four years. Still it may suggest to others some more fruitful investigation.

I am, Sir, yours faithfully,

W. E. HOME,
Fleet Surgeon.

May 25th, 1928.

ENCEPHALO-MYELITIS FOLLOWING VACCINATION.

To the Editor of THE LANCET.

SIR,—Before answering the criticisms of Prof. Turnbull and Prof. McIntosh, published in your issue of May 26th, I think it might be useful if I referred briefly to the general question of disseminated myelitis (or encephalo-myelitis) which has been recognised for over 50 years, and whose possible relationship to disseminated sclerosis was suspected as long ago as 1872 (Westphal). The number of histological investigations of the central nervous system in the former condition is not a very large one. These descriptions are very often marred by the fact that either only a portion of the central nervous system, usually the spinal cord, was investigated, or more often the histological methods employed were totally inadequate for the study of nervous tissues. Yet the principal features of this condition are not unknown. The case described and illustrated by J. Dreschfeld [1] in 1894 may be taken as quite typical of this condition, at any rate for the spinal cord. The characteristic perivascular demyelination, its symmetrical distribution on the two sides, the occurrence of patches of naked-eye softening (semi-liquefaction) in the cord and the consequent tract degeneration as the result of this destructive lesion, are all well illustrated. The demyelination in disseminated myelitis is always strictly perivascular and symmetrical in distribution. Although similar isolated perivascular lesions are found in acute cases of disseminated sclerosis, the large, progressive and usually asymmetrical patches of demyelination serve to distinguish it from disseminated myelitis. There is much reciprocal confusion in the literature in regard to these two conditions, and the labels attached to particular cases have varied widely. The occasional involvement of the optic nerves in either condition has served to increase this confusion, whilst the patches of true softening in the spinal cord in disseminated myelitis could only further complicate matters by leading to a diagnosis of "transverse myelitis." Some cases recorded would appear to be transitional forms between these two types.

The association of disseminated myelitis (or encephalo-myelitis) with acute infections has been well known almost ever since this condition was first recognised. Dreschfeld's own case was apparently not so associated with an acute infection, although he was perfectly aware of this association, as he refers to it in his article. In recent years cases of disseminated encephalomyelitis seem to have attained almost epidemic proportions. Of the acute infections with which it has been most commonly associated, vaccinia and measles head the list. The first (1912) histological recognition of this condition when associated with vaccinia we owe to Prof. Turnbull. A very good recent description of a case associated with measles is that of Wohlwill.[2] In going through the literature of this subject I have had to try and interpret in neuropathological terms the descriptions which are too often based on staining methods quite unsuited for nervous tissues. Yet many of these descriptions are extraordinarily accurate in spite of this disadvantage. It is without hesitation that I state that from the accounts to be found in the literature, disseminated (encephalo-) myelitis is a *pathological entity*, whatever its association with an acute infection may be. Clinically, there must be a wide range of variations according to the part of the central nervous system which is most severely attacked, &c. I have recently seen the spinal cord of a case associated with vaccination, where a patch 1 in. long of gross colliquative softening was present. In view of the wide problem presented by disseminated (encephalo-) myelitis as a whole, one might perhaps attach an undue degree of importance to certain matters of histological detail. *The type which is associated with vaccinia is histologically indistinguishable from the others.* It seems, therefore, that those of us who have been studying this condition have been rediscovering America. The most important new contribution to the histology of this condition is its association with vaccinia, an observation which we owe to Prof. Turnbull.

With reference to the letter of Prof. Turnbull and Prof. McIntosh, I should like to suggest that if any misunderstanding has arisen in regard to their description of the perivascular demyelination met with in disseminated (encephalo-) myelitis when associated with vaccination, it might possibly be ascribed to their use of the word "softening," which by itself is lacking of any precise histological meaning, for a lesion of the myelin sheath only. Yet I made it quite clear in a footnote in my paper that they did associate this "softening" with "loss of the myelin sheath." As they stressed the "softening" throughout their paper and only referred to the "loss of the myelin sheath" once, it seems to me fairly obvious that they did not stress the "demyelination." With regard to the two types of lesion which they described, I failed to confirm this observation of theirs, and made no reference to it in my paper. I only found "perivascular demyelination" as the characteristic lesion of this condition, as it is in all cases of disseminated (encephalo-) myelitis, whatever the latter's association may be with an acute infection. This lack of agreement might possibly be ascribed to the fact that Prof. Turnbull's and Prof. McIntosh's study is principally based on paraffin sections stained in the ordinary way, whilst I employed the methods specially devised for nervous tissues. I gather from their letter that in my desire to give them all the credit for the recognition of the areas of "demyelination" I have quoted their words a little loosely and have attributed to them more than they actually claim. I hope that the "many" who derived a wrong impression of the work of Prof. Turnbull and Prof. McIntosh as the result of reading my paper are sufficiently interested in this subject to read their article as well, and thereby banish the misconceptions for which Prof. Turnbull and Prof. McIntosh apparently hold me responsible.

I am, Sir, yours faithfully,

J. R. PERDRAU.

National Institute for Medical Research,
Hampstead, N.W., May 30th, 1928.

[1] Brit. Med. Jour., 1894, i., 1174.
[2] Zeit. f.d.g. Neur. u. Psychiat., 1928, cxii., 20.

HABITUAL OFFENDERS AND THE SALE OF FOOD.

To the Editor of THE LANCET.

SIR,—On page 1140 of the current number (June 2nd, 1928) of THE LANCET the statement is made under "Dairyman Imprisoned":—

"It would be to the public advantage if the law allowed a court to make an order debarring such habitual offenders from taking any further part in the sale of food."

I would draw your attention to the fact that the law, The Milk and Dairies (Amendment) Act, 1922,

under which local authorities register both dairymen and dairies, by Section 2 definitely empowers local authorities to refuse registration where the public health is or is likely to be endangered by any act or default of any person registered or who seeks to be registered as a retail purveyor of milk, and in Subsection 2, the court before whom any person registered as a purveyor of milk is convicted of any offence under this Act, or any other enactment relating to milk and dairies, may, on the application of the local authority, in addition to any other penalty, order the removal from the register of the person so convicted by either absolutely or in respect of any specified premises for such period as the court may think fit.

I am, Sir, yours faithfully,

H. KERR,
Medical Officer of Health.

Health Department, City and County of Newcastle-upon-Tyne, June 1st, 1928.

*** This letter is the subject of comment under the heading "Medicine and the Law."—ED. L.

RADIUM TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—My attention has been drawn to a letter from Lieut.-Colonel Spencer Mort in your issue of June 2nd, referring to some remarks I made in the House of Commons on cancer. From the letter I understand that the writer claims much more for radium in the treatment of cancer than I was aware of. When he writes: "Surely . . . it would be much more helpful and hopeful to all sufferers from carcinoma if these could be induced to come forward *at the earliest moment* (my italics) with a hope of painless cure by short-wave radiations?" I wonder how many of those qualified to judge will agree with him. I would like to ask: If any early case of operable carcinoma presented itself to any competent surgeon to-day, how many would use radium in preference to removal by operation? If few or none of my remarks are justified—if there are some, then I was not aware of this fact. My remarks were intended to prevent delay until cases became inoperable. My experience of uterine and rectal cases which were treated by radium was most unfortunate, as none of my cases was cured. Some had their life prolonged, but all died from the disease. I am well aware of the *assistance* that radium can give, but as the question raised, and the position taken, by Colonel Spencer-Mort is so very important, I hope that a definite pronouncement may be made for my benefit and for those who, through fear of operation, delay to seek advice.—I am, Sir, yours faithfully,

A. VERNON DAVIES, M.B., M.P.

London, June 4th, 1928.

*** We have recently set out the evidence—surgical, radiological, and physical—that if radium can effectively be brought in contact with a cancer, the growth can be made to disappear. The technique for so doing appears to have been mastered in the local treatment of carcinoma in certain situations. So much, at least, can be said safely.—ED. L.

A DISCLAIMER.

To the Editor of THE LANCET.

SIR,—I have seen this morning in the *Daily Express* what purports to be an interview with me reproducing my words. Many of the things reported I did not say; others were said with the distinct understanding that they were private. The message I permitted to be published was the fact, learned from my journey to New Zealand, that closer intercommunication between the medicine of the motherland and the Dominions would be of enormous value. Of course no proof of the intended article was submitted to me.

I am, Sir, yours faithfully,

VICTOR BONNEY.

Devonshire-place, W., June 6th, 1928.

Parliamentary Intelligence.

HOUSE OF COMMONS.

TUESDAY, JUNE 5TH.

Re-Assembly of the House of Commons.

The House of Commons re-assembled on June 5th after the Whitsuntide recess.

Rates Paid by Voluntary Hospitals.

Captain CROOKSHANK asked the Minister of Health what was the total sum paid in rates in each of the last two years by the voluntary hospitals in England and Wales.—Sir KINGSLEY WOODS, Parliamentary Secretary to the Ministry of Health replied: I regret that statistics giving the information desired by my hon. and gallant friend are not available.

Miners and Silicosis.

Mr. JENKINS asked the Secretary for Mines if he had taken any steps to ascertain what number of mine workers in the South Wales coalfield had been unable to follow their employment due to silicosis; and if any compensation had been paid in respect of any of these cases.—Sir WILLIAM JOYNSON-HICKS replied: I regret that, for the reasons indicated in my reply on the 3rd of last month, the information asked for in the first part of the question is not available. No compensation is payable at present to workmen who contract this disease in the coal-mining industry; but I have asked the Departmental Committee on Workmen's Compensation for Silicosis to advise on the terms of the scheme under Section 47 of the Workmen's Compensation Act for the industry, and for this purpose I have appointed to the Committee representatives of each side, nominated by the Mining Association and the Miners' Federation respectively.

Mr. JENKINS asked the Secretary for Mines whether his Department had taken any steps to take tests as to the quantity of silica in the strata of the coal mines of South Wales.—Commodore H. D. KING, Secretary for Mines, replied: Yes Sir, the inquiries which have been made as the occurrence of silicosis among miners working in hard rock in coal mines have included analyses and other tests of the rock dust.

Adulteration of Milk.

Sir WALTER DE FRECE asked the Minister of Health whether there was any increase, according to official statistics, in the adulteration of milk; whether all local authorities were expected annually to carry out any fixed or approximate number of tests; and whether he would take steps to see that such tests were generally carried out.—Sir KINGSLEY WOOD replied: The official statistics indicate a progressive decrease in the adulteration of milk, the percentage of samples reported by public analysts as adulterated or below the presumptive standards being 6·9 in 1927 as compared with 7·4 in 1926 and 9·3 in 1920. There is no specific requirement as to the number of samples to be taken annually by a local authority, but it is the practice of my department to communicate from time to time with those authorities which do not seem to be taking a sufficient number to provide a proper check on adulteration.

Exemption Orders for Cocaine and Cocaine Hydrochloride.

Mr. FENBY asked the President of the Board of Trade whether he was aware that the exemption orders applied for in about July, 1926, under Section 10 (5) of the Finance Act, 1926, in respect of cocaine and cocaine hydrochloride, being products liable to duty under Part I. of the Safeguarding of Industries Act, 1921, had not yet been issued; that his department refused to issue these exemption orders, although the products in question were still not made in His Majesty's Dominions; that, in consequence, hospitals and the general medical services, who were the chief consumers of these materials, which had to be imported, had during the past two years been compelled to pay more than would otherwise have been the case; and would he take steps to issue the exemption orders in question forthwith.—Sir PHILIP CUNLIFFE-LISTER replied: The manufacture of cocaine and cocaine hydrochloride in substantial quantities has been carried on in this country for some time past under the authority of the Home Office. I understand that these materials will shortly be available for disposal, and the conditions for exemption from duty are, therefore, not satisfied.

OPENING OF WEMBLEY HOSPITAL.—On June 2nd, the Duke of York, accompanied by the Duchess, opened a hospital at Wembley which has been built at a cost of £20,000, all of which has been raised during the past three years. Twenty beds are available, and the number can be doubled at a comparatively small cost.

Obituary.

GEORGE EDWARD SHUTTLEWORTH, B.A. LOND., M.D. HEIDELBERG, M.R.C.S. ENG.

THE death occurred, on May 28th, as we noted last week, of Dr. George Edward Shuttleworth, for many years medical superintendent of the Royal Albert Asylum, Lancaster. By his death psychological medicine has lost one who for many years was one of its outstanding figures, and that section of it which is concerned with Mental Deficiency has lost one acknowledged by all to be its leading authority.

Shuttleworth who was 86 years of age at the time of his death, received his medical training at King's College Hospital, and Heidelberg, where he graduated in medicine in 1869. His connexion with mental deficiency began shortly after qualification when he was appointed assistant medical officer to Earlswood Asylum, at the time under the superintendency of Dr. J. Langdon-Down. In 1870 he was selected to be Superintendent of the Royal Albert Institution at Lancaster, and he remained there for 23 years. On leaving Lancaster he came to London, where he took up consulting work, and from this time until he was nearly 80 years of age, when he retired from practice, he was the doyen of this branch of medicine. His advice was sought by high and low from all parts of the country, and many patients were sent to him from abroad. He was a prominent and regular attendant at scientific meetings, and an active and highly valued member of practically every society or body which was in any way concerned with the interests of mental defectives. He was, in fact, for many years the heart and centre of most of the work in this country on mental deficiency.

In order rightly to appreciate the value of his work, it is necessary to understand what were the conditions which obtained when he became Superintendent of the Royal Albert Asylum. At that time, although there were in the country a few excellent institutions for defectives, the methods for training such persons were empirical, and for the most part haphazard, rather than based upon any scientific principles. Shuttleworth's keen interest in physiology (he had taken his degree at London University with honours in this subject) enabled him to appreciate to the full the physiological principles of training which had been described in 1864 by Dr. E. Seguin of America, and he became an enthusiastic user and teacher of these methods. Under his guidance and zeal the Royal Albert soon acquired a world-wide reputation, and visitors from all parts came there to gain instruction in the scientific training of defectives. When Shuttleworth left Lancaster in 1893 and came to London, one of his chief concerns was to organise classes of instruction for teachers and nurses who were going to take up the care of defectives, and the majority of those who are now prominent in this work owe their training to him. Beyond the handful of training institutions in existence at that time there was no provision whatever for the education of the mass of defectives throughout the country; indeed, officials and the general public were blind to the fact that any considerable number of defectives existed. There is not the slightest doubt that the propaganda undertaken by Shuttleworth and his little band of disciples had a very important influence in educating official and public opinion as to the claims of the mentally defective, and in the provision of those educational facilities which we have to-day. Shuttleworth was the leading expert member of the Board of Education Departmental Committee which was set up to inquire into this matter. The report of this committee led to the passing of the Defective and Epileptic Children Act of 1899, and this Act was the foundation of the whole system of special education for children of the public elementary school class which now exists in this country.

Shuttleworth made many important literary contributions to the subject. His first publication was an account of "Two Cases of Microcephalic Idiocy," in 1875. He also wrote valuable articles in the Encyclopædia Medica, Allbutt's System of Medicine, Hack Tuke's Dictionary of Psychological Medicine, and numerous journals. The writing by which he is chiefly known, however, is his very valuable and practical little book on "Mentally Deficient Children, their Treatment and Training." This was first published in 1895. It was at once recognised as a standard book, and was largely used by medical men and teachers. A fifth edition, in which Dr. W. A. Potts collaborated, was published in 1922.

Dr. A. F. Tredgold writes: "At the present time this country, in regard to its laws, its training establishments, its methods and availability of education, its courses of instruction for students and teachers, its clinical research and literature, and its general care and treatment of the mentally deficient, occupies a leading place. This position is due in no small measure to the writings and teaching, the propaganda and pioneer work, and the life devotion of Shuttleworth. His personality was such as to endear him to all who were brought into contact with him. Although in talking to him one was at once conscious of his wide knowledge and ability, the outstanding impressions which he produced were those of an absolutely sincere, sympathetic, kind-hearted, and unassuming man. There must be many to-day who will remember and be grateful for his shrewd advice and kindly sympathy. The writer had the privilege of knowing him for close on 30 years, and mourns the loss of one who was always a true friend and wise counsellor."

JOSEPH THOMPSON CARSON, M.B., F.R.C.S.EDIN.

AT the early age of 43 Dr. J. T. Carson died at Dover on May 30th. An Ulsterman by birth, he graduated in medicine at Edinburgh in 1908, afterwards gaining general experience as house surgeon at infirmaries at South Shields, and at Bolton, at Birkenhead Borough Hospital, and elsewhere. During the late war he held a captain's commission in the Royal Army Medical Corps, and served as radiologist to the 28th General Hospital at Salonika from 1915 to 1918. Afterwards he settled in practice at Oldham, and finally at Dover, where he was honorary surgeon to the hospital, having taken the Fellowship of the Royal College of Surgeons of Edinburgh in 1922. Two years ago he developed signs of splenomedullary leukæmia, but though aware of his condition, he continued his work to the last.

THE LATE SIR JAMES HODSDON.

Dr. James Burnett sends the following words of tribute to the memory of the late Sir James Hodsdon, whose obituary notice appeared in THE LANCET last week. "As a physician," he writes, "I feel it my duty to pay a tribute to the memory of my old teacher, Sir James Hodsdon. I was a member of his class at Surgeon's Hall in 1896. At that time he had the largest following of all the extramural lecturers on surgery. To the outward observer he appeared brusque, almost unkindly, in his manner, but that was on the surface; beneath a somewhat stand-off exterior there beat a most kindly and sympathetic heart. To know the man was to admire him, to respect him, to love him; for he was a man of very deep feeling, and his first thought and care were always for others. Hodsdon was not what is commonly known as a "brilliant" surgeon, but his results were beyond criticism. Quiet, and somewhat dogmatic in manner, as has been implied, he could be trusted to carry out any surgical operation with skill, care, and precision. Every seemingly trivial procedure was accomplished with the same attention to minute details and the well-being of the

patient as would be given in a major operation. He always put the patient first. As a lecturer he was at his best. His course on surgery was for many years recognised by students as the most complete and the most instructive that could be obtained in the Edinburgh School, and it is probably as a lecturer that Hodsdon will be remembered best, for so many graduates to-day owe to him their early knowledge of the art and science of surgery. In Edinburgh his name will be revered with those of Armandale and Alexis Thomson; these three, in fact, probably forming the most outstanding trio of surgeons Edinburgh has produced in recent times."

A further tribute from a younger pupil shows how long and how deep the influence was of Hodsdon's teachings: "When Hodsdon commenced systematic teaching in Minto House, many lectures were being delivered by more eminent men, but it was soon seen that Hodsdon's were the finest; his course was more of an advanced type and attracted the senior students, while he was intensely interested in the work and took infinite trouble in the preparation of his deliveries, bringing them to such a state of excellence that, later, when he continued at the Surgeon's Hall, he attracted a large class, all of whom will remember the lessons learnt from him with vividness. In the wards of the Royal Infirmary he ever displayed his special interest in his patients; his operative ability, sound technique, and painstaking after-care quickly endeared him to them and gave them an unusual confidence. His clinique followed his work with the greatest interest, and learned under him a practice of surgery never to be forgotten."

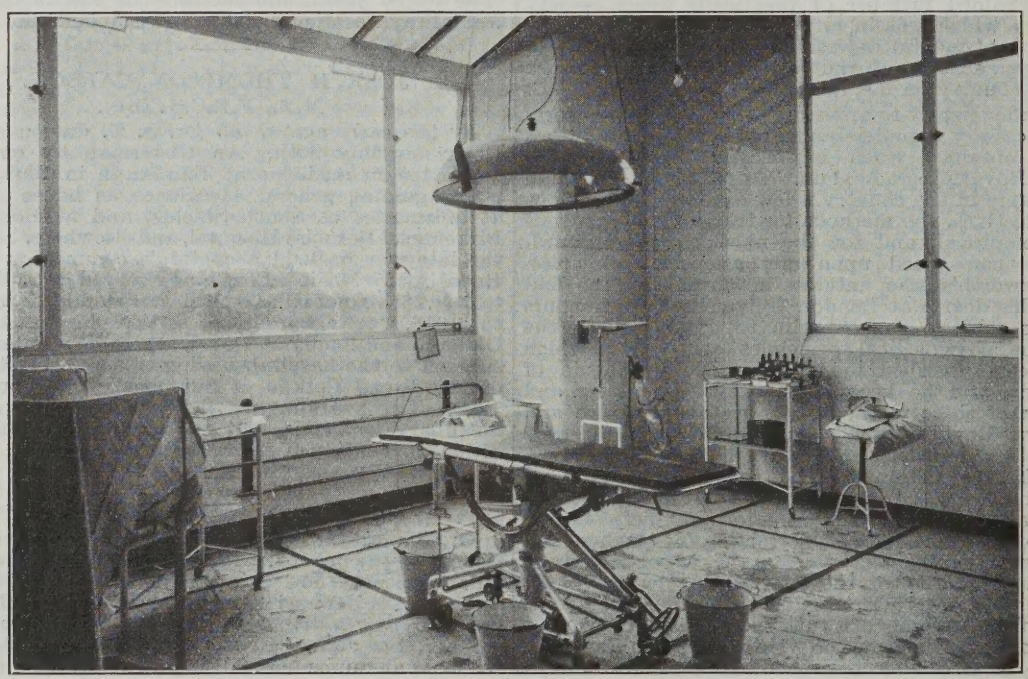
NEW OPERATING THEATRES AT CAMBRIDGE.

EXTENSION OF ADDENBROOKE'S HOSPITAL.

ON Friday, June 1st, Sir Berkeley Moynihan, President of the Royal College of Surgeons, opened two new operating theatres and a maternity ward which have been added to Addenbrooke's Hospital, Cambridge.

Before the ceremony a luncheon was given by the staff of the hospital at Downing College, by permission of the Master and Fellows. Sir Hugh Anderson, Master of Caius College, presided, and many members of the University and representatives of the medical profession in Cambridge and the surrounding counties were present.

After the luncheon Sir Berkeley Moynihan inspected the new operating theatres and maternity ward, and at 3 o'clock the opening ceremony was held in the casualty department of the hospital, in the presence of a large gathering. Mr. T. Musgrave Francis (chairman of the general committee) took the chair. He was supported by Mr. C. R. W. Adeane (president of the hospital), the Rev. G. A. Weekes (Vice-chancellor of the University), Councillor E. W. Amies (Mayor of Cambridge), and Dr. E. H. Parker. The Chairman, introducing Sir Berkeley Moynihan, spoke of the gratification felt at his presence, and hoped that he might look with favour upon the new theatres and the further schemes for enlargement and improvement of the hospital. He also extended a welcome to Lord Knutsford (chairman of the London Hospital), who was among the guests, and with a reference to the venerated memory of the late Regius Professor, Sir Clifford Allbutt, who, like Sir Berkeley, came from Leeds, expressed regret that Sir Humphry Rolleston, Sir Clifford's successor, was unable to be present that afternoon.



One of the new operating theatres at Addenbrooke's Hospital.

[*Photograph by the "Cambridge Chronicle."*]

Sir Berkeley Moynihan then delivered the address which we publish on page 1207. The proceedings ended with a vote of thanks by Mr. Adeane, seconded by the Vice-chancellor, who expressed a hope that when the University's new school of physiology was open there would be greater coördination between surgery and physiological science in Cambridge.

The new theatres, of which we publish an illustration, are on the third floor, and were designed by Mr. Kay, of Leicester, the work being carried out by Messrs. Martin and Co., of Northampton. The theatres and adjoining rooms cost £10,000 to build.

nd another £1500 to equip. They are thoroughly p-to-date in design and equipment. The space ormerly occupied by the old operating theatre nd two other old wards was used for the new aternity ward. This consists of a labour room, hich can be used as an operating theatre, two nall wards, each with four beds, and several smaller ooms. The cost of the whole was £3500.

Medical News.

UNIVERSITY OF CAMBRIDGE.—Dr. Alfred Ernest arclay has been appointed University Lecturer in Medical adiology and Electrology. Dr. Barclay is at present cturer in radiology in the University of Manchester and on. medical officer of the X ray and electrical departments the Manchester Royal Infirmary.

At a recent congregation the following degrees were nferred :—

M.D.—E. P. Hicks.
M.B., B.Chir.—W. J. Moody and H. A. Clegg.

SOCIETY OF APOTHECARIES OF LONDON.—At recent aminations the following candidates satisfied the examiners the undermentioned subjects :—

Surgery.—M. K. Bryce, London Hosp.; H. M. Feldman, Leeds; H. A. Hennessy, Adelaide and London Hosp.; N. C. R. Keukenschrijver, Amsterdam; C. P. Madden, St. Bart.'s Hosp.; and H. D. K. Wright, St. Bart.'s Hosp.

Medicine.—K. D. C. Beckitt, Manchester and Charing Cross Hosp.; L. J. Corbett, St. Mary's Hosp.; N. C. R. Keukenschrijver, Amsterdam; A. A. Leibovitch, Kharkoff and London Hosp.; and L. W. Sanders, Manchester and Charing Cross Hosp.

Forensic Medicine.—A. C. Banerji, Charing Cross Hosp.; H. I. Jones, St. Mary's Hosp.; and N. C. R. Keukenschrijver, Amsterdam.

Midwifery.—M. K. Bryce, London Hosp.; N. C. R. Keukenschrijver, Amsterdam; and A. E. Vawser, London Hosp.

The Diploma of the Society was granted to the following ndidates, entitling them to practice medicine, surgery, and idwifery: K. D. C. Beckitt, L. J. Corbett, H. I. Jones, . C. R. Keukenschrijver, and L. W. Sanders.

THE MEDICAL INSURANCE AGENCY.—A dinner celebration of the twenty-first anniversary of the Medical nsurance Agency was held at the Hotel Victoria on the vening of May 30th, when the Chairman of the Committee Management, Sir Humphry Rolleston, presided. Among ne guests of the Committee of the Agency were Sir Percy hompson, Deputy Chairman of the Board of Inland evenue; Dr. J. Smith Whitaker, of the Ministry of Health; r. Digby Besant, General Manager and Mr. H. D. O'Neill, ecretary of the Clerical and General Life Assurance ociety; Hon. Evelyn Hubbard, Chairman of the Guardian ssurance Company; Mr. Henry J. Tapscott, General anager, and Mr. A. Moorhouse, actuary of the Century Life ffice; Sir Charters Symonds, Treasurer of the Royal Medical enevolent Fund; Dr. Vincent Dickinson, Deputy Master the Society of Apothecaries of London; Mr. H. W. arson, President of the Medical Society of London; Dr. J. Allan, Chairman of the Medical Sickness Annuity and fe Assurance Society; Mr. Greville Topin, Scottish Widows' und Life Assurance Society; Dr. N. G. Horner, Editor the British Medical Journal; Dr. James Neal, General ecretary of the Medical Defence Union; Mr. Bertram utton, Secretary of the Medical Sickness Annuity and Life ssurance Society; Mr. Pitt Albert, Sun Life Assurance ociety; Mr. R. H. Burr, Employers' Liability Assurance orporation; Mr. Alex Gibb, Equity and Law Life Assurance ociety; and Mr. E. V. Davidson, Scottish Equitable Life ssurance Society.

After the loyal toasts, given from the chair, Mr. Besant, in roposing "The Medical Insurance Agency," referred to the ccess which under good management had attended the gency from its inception in 1907. At that time the motor- r had hardly begun, while the Workmen's Compensation ct had only just come into being. The new insurance oblems coincided with the genesis of the M.I.A. Noting at the late Mr. Guy Elliston was a tower of strength in e early days of the movement, he said something like ,500,000 of policies had been issued to doctors and their pendents through the Agency, while an enormous sum of oney had been given to medical charities through its edium. Sir Robert Bolam, in reply, said that the M.I.A. alued highly the cordial coöperation of the various insurance odies, while the outstanding features of the Agency were at, while it was able to give the best insurance advice to e medical profession, every penny of surplus went to arities associated with the medical profession. Mr. Ferris-Scott, who also replied, said that competition for the insurance business of medical men was now extraordinarily keen, while among the advantages of insuring with the M.I.A. were the rebates to doctors, which already showed a total saving to the medical profession of over £28,000, nearly £1800 being in respect of 1927; the total distribution to medical charities, by the end of the past year, amounted to £18,091. Referring to the valuable interest which the medical journals took in the Agency, he said that the Editors of *The Lancet* and the *British Medical Journal* were among the founders of the movement, and he mentioned that the M.I.A. had offered Epsom College £500 to establish the first Presentation Scholarship in memory of Sir Dawson Williams. Dr. Langdon-Down, who proposed "The Guests," with which he coupled the names of the Hon. Evelyn Hubbard and Sir Charters Symonds, Royal Medical Benevolent Fund, spoke of the assistance received from the master mariners of insurance by the M.I.A., which in its early days was sailing on unknown seas. Mr. Hubbard, in reply, referred to the voluntary nature of the work done by the M.I.A., saying that, as in his opinion the voluntary system was essential to the general hospitals, so such voluntary help as was given by the M.I.A. was worth ten times as much as official service. Sir Charters Symonds said that he hoped the efforts which the Agency were making to support medical charities would become a universal habit among medical men; it would then be possible to give larger pensions, and more substantial assistance in many worthy directions. Sir Squire Sprigge proposed the health of the chairman.

HARVEIAN SOCIETY OF LONDON.—The annual dinner will be held at the Connaught Rooms, London, on Thursday, June 14th, at 8 P.M.

INDIAN MEDICAL SERVICE DINNER.—The annual dinner will be held at the Trocadero Restaurant, London, on Wednesday, June 20th, at 7.15 P.M., under the chairmanship of Major-General Sir R. Havelock Charles. Particulars may be had from the joint hon. secretary, Major Sir Thomas Carey Evans, 31, Wimpole-street.

LONDON HOSPITAL MEDICAL COLLEGE.—Prizes and certificates will be distributed by Sir Samuel Hoare, Secretary of State and President of the Air Council, in the Library of the College at 3 P.M. on Friday, June 29th, and the distribution will be followed by tea and music in the hospital gardens.

INSTITUTION OF HEATING AND VENTILATING ENGINEERS.—The programme of the summer meetings of the Institution, which will be held this year at Blackpool, from June 18th to 20th, has now been issued. Particulars may be had from the secretary, Mr. H. B. Watt, 12, Russell-square, London, W.C. 1.

BIOCHEMICAL SOCIETY.—A meeting of this Society will be held at Rothamstead Experimental Station, Harpenden, to-day, Saturday, June 9th. The experimental fields and laboratories will be inspected during the forenoon, from 11.15 onwards, and the meeting for business and communications will be held at 2.15 P.M. Further details may be had from the hon. secretary, Mr. R. Robinson, D.Sc., Lister Institute, Chelsea Bridge-road, London, S.W. 1.

FEDERATION OF HEALTH RESORTS OF FRANCE.—The twenty-first Voyage d'Etudes Médicales (V.E.M.) will take place between the dates of Sept. 1st and 12th inclusive. The tour will be under the direction of Dr. Maurice Villaret and Dr. Paul Harvier, respectively Professor and Professor Agrégé of the Faculty of Medicine at Paris, and the trip will be organised by Dr. Janot, secretary of the Thermal Federation of Auvergne. L'Auvergne and Le Bourbonnais will be visited, and the more important health resorts will be arrived at in the following order. Starting at 2 P.M. on Sept. 1st from Pougues, St. Honoré-les-Bains, Bourbon-Lancy, Bourbon-l'Archambault, and Néris-les-Bains will be visited, arrival at La Bourboule being timed for Sept. 4th. On the following day after visiting La Bourboule, the party will be conducted to Mont-Dore through Puy de Sancy and the Plateau des Capucins, dining and sleeping on the evening of Sept. 7th at Vic-sur-Cère. Then, passing through St. Nectaire, the party will visit Royat on Sept. 9th and sleep there, visiting Chamalières and taking part at a reception at Clermont-Ferrand. On Sept. 10th the party will dine and sleep at Châtel-Guyon, while the following two days will be occupied in a visit to Vichy. The approximate cost to the travellers will be 1100 francs, this figure being estimated to cover the cost of expenses for hotel accommodation and transport, between Pougues and Vichy, while a reduction of 50 per cent. can be secured on the French railways from the railway station on the frontier to the place of assembly, and from the place of disbandment back to the frontier. Full information will be supplied by Mme. Juppé-Blaise, Federation of Health Resorts of France, 1, Gordon-square, London, W.C.

AUSTRALIAN AND NEW ZEALAND MEDICAL ASSOCIATION IN ENGLAND.—The summer dinner of this Association will be held at the Trocadero Restaurant, Piccadilly, on Friday, June 15th, at 7.45 for 8 P.M. It will be preceded by a general meeting at 7.30 P.M., which all visitors and members are requested to attend, to elect office-bearers for the forthcoming year. Sir Anthony Bowlby will be the official guest of the Association and all medical visitors from Australia and New Zealand are invited to be present. The secretaries are Mr. E. T. C. Milligan and Mr. P. J. Jory, who may be addressed at 86, Harley-street, London, W. 1.

A HOSPITAL BENEFACTOR.—Mr. Dan Mason, who died suddenly at Biarritz on May 24th, founded and completely endowed the Chiswick General Hospital of 42 beds. It was established in 1911, and enlarged in the following year, and again in 1917. In addition, he made many benefactions to the West London Hospital at Hammersmith. He built a new nurses' home and was chiefly instrumental in providing new out-patients' and X ray departments, new operation theatres, a chapel, three new wards containing 39 beds, and a paying wing of 26 beds. He also founded the "Mason Samaritan Fund," which places 12 beds at St. Mary's Hospital, Broadstairs, at the disposal of the West London Hospital for child patients suffering from spinal complaints, surgical tuberculosis, &c., and provided the cost of maintaining the female accident ward of 14 beds, less contributions from patients. Mr. Mason was the founder and chairman of the Chiswick Polish Company. By his will he has given £5000 each to the pension funds of the West London and Chiswick Hospitals, and the residue of his estate is to be distributed among London hospitals and other charities at the discretion of his trustees.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

FRIDAY, June 15th.—8 P.M., OBSTETRICS AND GYNÆCOLOGY. Prof. A. Louise McIlroy: A Case of Dysmenorrhœa Due to Calcification of the Ovary. Mr. Clifford White: Vulval Metastases from Pelvic Growths. *Paper:* Prof. W. Stroganoff (Leningrad): Standard of Results in the Treatment of Eclampsia. An experiment in the treatment of eclampsia by telephone consultation. (Communicated by the hon. secretary.)

SATURDAY.—3 P.M. (at the Pharmacological Laboratory, Oxford), THERAPEUTICS. Annual General Meeting: Election of Officers and Council.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.

TUESDAY, June 12th.—5 P.M., Dr. Charles Bolton: The Interpretation of Gastric Symptoms. (Last Croonian Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 11th, to SATURDAY, June 16th.—ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E. Clinical demonstration by Mr. MacCallan on Mon., at 3 P.M.—ROYAL NORTHERN HOSPITAL, Holloway-road, N. Clinical demonstration by Mr. Lane-Roberts (gynæcology) on Mon., at 10 A.M.—HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W. Clinical demonstration by Dr. Anthony Feiling on Tues., at 2 P.M. The above are free.—CHILDREN'S CLINIC, Cosway-street, N.W., and other hospitals. Second week: Instruction in all branches of diseases of children.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.

MONDAY, June 11th.—1.30 P.M., Mr. R. J. Cann: Examination of the Nose.

WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Ear.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

TUESDAY, June 12th.—4 P.M., Dr. R. R. Trail: Visit to King Edward VII. Sanatorium, Midhurst.

ST. MARY'S HOSPITAL INSTITUTE OF PATHOLOGY.

THURSDAY, June 14th.—5 P.M., Dr. P. Fildes: Principles of the Treatment of Tetanus with Antitoxin.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, June 12th.—3.15 P.M., Dr. W. R. Reynell: The Autonomic Nervous System, Its Forms and Functions.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, June 11th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. James Collier: Vascular Disease as it Affects the Central Nervous System.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Mr. Armour: The Surgical Aspects of Compression Paraplegia.

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Mr. Just: Demonstration of Methods of Testing the Eighth Nerve (in O.P. Dept.).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M. Dr. Symonds: Disseminated Sclerosis.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, June 11th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Monday and Thursday, at 2.30 P.M., there will also be demonstrations of Medical and Surgical Cases by Dr. J. Browning Alexander and Mr. H. W. Carson respectively.

ANCOATS HOSPITAL, Mill-street, Manchester.

THURSDAY, June 14th.—4.15 P.M., Mr. Platt: Treatment of Fractures with Demonstrations.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

TUESDAY, June 12th.—3.30 P.M. (at the Jessop Hospital), Mr. King: Hints and Tips in Midwifery.

FRIDAY.—3.30 P.M. (at the Royal Hospital), Prof. Hall: Clinical Cases.

Appointments.

MILLS, G. Percival, M.B., M.S. Lond., F.R.C.S. Eng., has been appointed Hon. Surgeon to the Birmingham General Hospital.

COPE, V. Z., M.D., M.S. Lond., F.R.C.S. Eng., Surgeon in Charge of In-patients; and HANDFIELD-JONES, R.M., M.C., M.S. Lond., F.R.C.S. Eng., Surgeon in Charge of Out-patients, St. Mary's Hospital.

Vacancies.

For further information refer to the advertisement columns.

All Saints' Hospital for Genito-Urinary Diseases, Vauxhall Bridge-road, S.W.—Res. Sen. H.S. At rate of £200, also H.S. At rate of £150.

Birmingham General Hospital.—Asst. S. £50.

Birmingham and Midland Homœopathic Hospital and Dispensary.—Res. H.S. £150.

Brighton, Royal Alexandra Hospital for Sick Children.—H.S. At rate of £120.

Bristol General Hospital.—Hon. Clin. Assts.

Child Guidance Clinic.—Psychiatrist and Med. Director. £120; also Asst. Psychiatrist, £600.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Radiologist. 150 guineas.

Coventry, Coventry and Warwickshire Hospital.—Res. H.S., also Res. H.P. Each at rate of £125.

Doncaster Royal Infirmary.—3rd H.S. At rate of £150.

Dreadnought Hospital, Greenwich.—H.P. and H.S. At rate of £110.

Durham County Hospital.—Jun. H.S. At rate of £120.

Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obst. Asst. Also 2 H.S.'s. Each at rate of £50.

Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.P. At rate of £150.

Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. At rate of £100.

Hellingley, Sussex, East Sussex County Mental Hospital.—Jun. Asst. M.O. £350.

Inverness, Northern Infirmary.—Jun. Med. Res. £100.

Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s. Each at rate of £100.

Liverpool Sanatorium, Delamere Forest, Frodsham.—Asst. Med. Supt. £250.

Manchester Ancoats Hospital.—H.S. At rate of £100.

Manchester, Baguley Sanatorium.—Asst. M.O. £350.

Manchester City, Education Committee.—Asst. School M.O. £600.

Manchester, Crossley Maternity Hospital, Ancoats.—Res. M.O. At rate of £50.

Manchester, Prestwich County Mental Hospital.—Asst. M.O. £350.

Manchester Royal Eye Hospital.—Sen. and Jun. H.S.'s. £150 and £120 respectively.

Manchester, Salford Royal Hospital.—H.P. and H.S.'s. All at rate of £125.

Margate, Royal Sea Bathing Hospital.—Two H.S.'s. Each at rate of £100.

Miller General Hospital for South East London, Greenwich-road, S.E.—H.P. At rate of £125. Also H.S. At rate of £125.

Oldham Royal Infirmary.—3 H.S.'s. Each at rate of £175.

Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Sen. Res. O. £200.

Royal Chest Hospital, City-road, E.C.—Med. Reg. £50.

Royal College of Physicians of London and Royal College of Surgeons of England.—Streatfeild Research Scholarship in Med. and Surg. £250.

Royal Naval Medical Service.—Surg. Lieutenants. £453.

Royal Northern Hospital, Holloway, N.—H.S. At rate of £70.

Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.

St. Mary's Hospital, W.—Asst. Director to Surgical Unit. £750. Also Asst. Pathological Chemist. £300.

St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clin. Assts.

St. Peter's (Whitechapel) Hospital, 74, Vallance-road, E.—Deputy Res. Med. Supt. £600.

Shrewsbury, Berrington Hospital.—Res. M.O. £250.

Southampton, Royal South Hants and Southampton Hospital.—H.P. £130.

Southport General Infirmary.—Jun. H.S. £150.

South Shields, Ingham Infirmary.—Sen. and Jun. H.S.'s. £200 and £150 respectively.

University of London.—External Examinerships.

University of London, South Kensington, S.W.—Graham Scholarship in Pathology. £300.

Victoria Hospital for Children, Tite-street, Chelsea, S.W.—Sen. Res. M.O. £250.

Willesden General Hospital, Gynæcological Out-Patient Dept.—Clin. Asst. Surgical Out-patient Dept. 2 Clin. Assts.

Windsor, King Edward VII. Hospital.—Sen. H.S. At rate of £120.

Wrexham and East Denbighshire War Memorial Hospital.—2 Res. H.S.'s. Each at rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Wishaw (Lanarkshire), Scalloway (Zetland) and Beauly (Inverness-shire).

The Secretary of State for the Home Department gives notice of a vacancy for an Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act for the Lanark District (Sheriffdom of Lanark). Applications should reach the Private Secretary, Scottish Office, Whitehall, London, not later than June 23rd.

Births, Marriages, and Deaths.

BIRTHS.

BILLING.—On May 29th, at Denholm, Chingford, the wife of Dr. E. Billing, of a daughter.

MARRIAGES.

BRAYFIELD—BEASLEY.—On May 26th, at St. Andrew's, Neasden-cum-Kingsbury, Felix Francis Brayfield, D.S.C., L.D.S., R.C.S. Eng., to Winnifred Mary Beasley, L.R.A.M., second daughter of the late H. R. Beasley, of Hornsey, and Mrs. Beasley, of Neasden.

DEATHS.

SHUTTLEWORTH.—On May 28th, at 36, Lambolle-road, Hampstead, George Edward Shuttleworth, M.D., M.R.C.S., Fellow of King's College, London, in his 87th year.

YOUNGER.—On June 2nd, at 2, Mecklenburgh-square, W.C., George Cuthbert Nelson Younger, M.R.C.S., L.R.C.P., son of the late E. G. Younger, M.D., and beloved husband of Lilian E. Younger (Née Abdy).

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Notes, Comments, and Abstracts.

THE SURGERY OF YESTERDAY AND TO-MORROW.

Being an Address delivered at the Opening of the New Operating Theatres at Addenbrooke's Hospital, Cambridge.

BY SIR BERKELEY MOYNIHAN, BART.,
PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

IT is said that there are stars so far away from us that with light travelling at the rate of 187,000 miles a second, their inhabitants, if any, and if capable of far-distant vision, would now be watching the events upon this earth at the time of the Crucifixion. I wish that it were possible for a few minutes for us to be in a star so distant that we might be able to peep into a Leeds operating theatre and there to follow the day's work, 40 years ago. I choose the period of 40 years, for in 1888 I was house surgeon to Mayo Robson, who in activity of thought, variety of practice, and technical accomplishments was far advanced in the incubation period from which he soon emerged as one of the foremost surgeons of his day.

Let me try to describe what we did in those days. I fear you will be shocked.

An Operating Theatre Forty Years Ago.

The surgeon arrived, doffed his coat, lest he should soil it with blood or pus, rolled up his shirt-sleeves, and took down from a cupboard in the passage leading to the theatre an old coat, as a rule a frock-coat of antique design, which bore many marks of usage, and was stiff here, there, and everywhere with blood, of which layer after layer had dried into its very fabric. One, at least, of the coats was worn with a special pride, indeed with a certain jauntiness, for it had been inherited from a retiring member of the staff. The cuffs of the coat were rolled back a little, just above the wrists; and the hands were washed in a "tip-up" basin, which was never cleansed except in the ordinary domestic way. The hands, when clean in a social sense, were soaked in a solution of carbolic acid, whose strength varied with the resistance of the surgeon's skin to its irritating effects. We used a 1 per cent. solution: and even with this our hands were often numb by the end of the afternoon; and the sodden skin became afterwards very rough and harsh, and desquamated for several days.

The patient meanwhile had been wheeled into the theatre, placed on a flat wooden operation-table (I keep in my consulting-room that which McGill used for his prostatectomies, in memory of the fact that I helped him with his first case), and the anæsthetic was given. In Leeds we preferred ether, following the teaching of Mr. Pridgin Teale. The skin of the operation area had as a rule been prepared some hours before; it was washed with ordinary soap, shaved, and a "compress" soaked in a weak solution of carbolic acid was applied. When this dressing was removed on the operation-table, a further application of 1 in 40 carbolic acid was made, and towels wrung out of this solution were laid around the site of the wound now to be made. The instruments had been taken from the cupboard, whose shelves were lined with green baize, and placed in a tray of 1 in 20 carbolic acid, about half an hour before operation. Turkey sponges, cleansed and soaked in carbolic acid for days or weeks, were used, and when soiled were wrung out of boiled water and weak carbolic acid; about six sponges sufficed for an operation. For an abdominal operation we had flat Turkey sponges in addition. When all was ready the spray was turned on, and a fine mist of steam, odorous with carbolic acid, soon bathed all engaged in the operation. If the spray failed, as it sometimes would, a shudder ran round the theatre, and we gazed at each other in horror and deep apprehension as to the dire consequences of this unpardonable lapse on the part of the responsible dresser. In our mind's eye we could see the baffled germs, kept back so long by the antiseptic barrage, swooping down to the wound. Rubens, not even when he painted Saint Ignatius in the rite of exorcism, ever saw evil demons more clearly. In the case of a senior member of our staff, consternation was turned to respectful admiration at the extent and most decorative variety of his vocabulary of denunciation and colourful invective. I have always suspected one of our students, a great friend of mine, a stalwart colonial, of having now and again engineered the catastrophe, in order to learn something which might enrich his own vocabulary, in which, however, few of us were ever to discover any serious deficiency.

The house surgeon, who assisted generally, wore an old coat or a "blazer," whose long service had earned a rest: the dresser, who handed instruments and ligatures, was

content with the turned-back cuff. The ligatures were of catgut, rolled on to spools kept in boxes filled with carbolic oil and fixed to the kidney-shaped instrument tables. It was the duty of the operation porter to roll the catgut, delivered by the maker in small bottles, on to the spools.

As soon as the operation was complete, the whole area involved in it was washed, over and over again, with an antiseptic solution, that most commonly used being carbolic acid of strength between 1 in 40 and 1 in 100. Clean cases and infected cases were treated alike. Often the edges of the wound were held together, and the lotion forced into the wound with a Higginson's syringe, in the hope that the "cellular spaces" would be distended with the antiseptic. All wounds except the smallest were drained. A "radical cure" of hernia, for example, was treated by Mitchell Banks's method; the sac up to the external abdominal ring was removed. The hernia, that is to say, was converted from a complete rupture to a bubonocele. The wound before closure was wiped over with a 1 in 8 solution of carbolic acid in glycerine, and a drainage-tube was introduced. This exact method I saw practised nearly 20 years later by Lucas-Championnière (who explained that he had never varied the method since he had learned it from his master, Lister, in Edinburgh.) Bassini had not, in 1888, published his paper in which he first made it clear that the inguinal canal must be laid open and repair begun, not at the external, but at the internal ring. Over the closed wound iodoform was dusted and a dressing of carbolised gauze and salicylic silk padding was held in position by carbolised bandages.

There was one operation day in the week, Thursday. The senior of our four surgeons began at one o'clock; his list completed, the surgeons followed in order of seniority, Jessop, Atkinson (a Hey on his mother's side), McGill, and Mayo Robson. The time at which our firm could begin was regulated by the length of the lists of the seniors and by their punctuality, not always or often impeccable. I can still see Mayo Robson, arriving in the hope of an early start, but frustrated and delayed, becoming more and more impatient. He was even then the busiest member of the staff outside the hospital and had no time to waste. So in desperation, another day was demanded for his list, and one of the most startling innovations, bitterly opposed, of course, was inaugurated.

Abdominal Surgery.

Abdominal operations were things apart. No deliberate abdominal section was ever made in the ordinary theatres. Private wards were available, and special nurses; and the hour of 8 A.M. was consecrated to the performance of such very critical operations. It was the prerogative of the resident surgical officer to help with every one.

The year 1888 was an eventful one. No case of appendicitis was operated upon, though our records show one case of "perforation of the vermiform appendix" treated by operation in 1887. In 1888 one case of "perforating ulcer of the stomach" was operated upon with a fatal result; and one case of gastro-jejunostony for carcinoma of the pylorus also failed to recover. In all, 45 abdominal operations, including "explorations," were performed, with 12 deaths. Of the 45 cases, 14 were examples of ovarian cyst. The first nine cases of cholecystotomy were performed, with two deaths.

The cases of acute intestinal obstruction, transferred, after due delay naturally, from the medical wards to which in the first instance they were invariably admitted, exhibited a veritable martyrology. Any escape from the dread of the cases was worth consideration, and I am sure we saw little humour in the suggestion made by Jonathan Hutchinson that the victim of strangulated intestines might fortunately experience a disentanglement of his ensnared bowel if, while held by the arms and legs by stalwart policemen, his body, face downwards or inverted, was heartily shaken from side to side, or submitted to vigorous abdominal taxis combined with copious enemata. Hutchinson in 1890 admitted that this was a "troublesome and somewhat undignified procedure," but was confident that if it could be shown to be effectual "no conscientious surgeon will allow himself to neglect it because it is disagreeable." As a solace to those who might regret the loss of a case not treated by operation, he asserted that during 20 years of surgeoncy at the London Hospital he had never, so far as memory served, encountered a case in which the post-mortem upon a case of intestinal obstruction made him regret that he had not opened the abdomen. If one of the most distinguished members of our profession, who was then President of the Royal College of Surgeons, could say this, what criticisms as to ill-conceived and reckless adventure might not the pioneer in surgery expect from the physician or pathologist? What courage and what indifference to criticism must the surgeon then have shown. Mikulicz told me, in 1903, that he had operated upon 35 cases of perforated gastric ulcer with 34 deaths. (I have never found the published record of this.) But, as I used to tell my students, there was another way of looking at th story. Mikulicz had operated upon 35 cases, with or recovery. One life was saved, not a large number sacrifice

Coats and Gloves.

I well remember the first coat ever made for speci wear in the operating theatre. Mayo Robson designed i The material was a soft tweed, of rough surface, and light blue-grey in colour; it reached the knees, and i stand-up collar came near to the chin. It was worn f years, and I clearly remember that on one occasion, certainl it was cleaned. When I became resident surgical office in 1890, I introduced white washable coats; and I can reca my shyness at entering the theatre with Mr. W. H. Brow both of us in spotless white, and the titter which develope into a guffaw at our ridiculous appearance. Rubb gloves did not come until later, and I believe that I was t first surgeon in Europe to wear them. They were introduce into surgery by Halsted, of Baltimore. I had been struc by Halsted's writings, and in my youthful enthusiasm ar gratitude I had written to him inquiring about some poi in connexion with hernia. He was a good and most co siderate and helpful correspondent; and soon after h introduction of the rubber glove he sent me six pairs, and wore them for months, puncture or no puncture, and enjoye the mocking hilarity of my colleagues and the students.

The complete change of clothes, white shoes, trouser coats, sleeves, cap, and mask, did not begin with us unt May, 1903. The students called me then the "pylor pierrot." It is astonishing to learn that even to-day t change of clothes for work in the theatre is not universa For, in the first place, it is quite a simple experiment demonstrate, by soiling clothes with easily recognisab organisms (the bacillus prodigiosus, for example) that germ are cast from them to all parts of the theatre. Some these may be harmful to the wound; and it is better to ke them away. And, in the second place, the comfort of t surgeon is something; and the comfort of a change undeniable. The reek of ether in the garments of the theat is sometimes very unpleasant to patients or friends se later in the day.

Equipment and Technique.

The theatre itself has changed beyond recognitio Forty years ago the benches in our theatre were of wooc the windows had heavy sills, the roof had beams across it the instrument cupboard was of oak, with lined wood shelves, the floor was covered with oilcloth, there was an ope fireplace, the chairs were of the ordinary kitchen type one door opened into a corridor, another on to the landin at the top of the staircase along which everyone passed the wards. A spray in the theatre was very necessar Leonard Hill has lately shown the surprising effects produce on the germ content of the atmosphere by spraying it wi an antiseptic.

The work done in the theatre was of course quite differe from that seen there to-day. A comparison of our operatio lists 40 years ago, with those of the present time, are fu of interest. Tumours were removed, deformities repaire defects made good, sinuses leading down to tuberculo glands or necrosed bone were dilated and scrape "Bigelow's dilator" was an instrument required for eve operation list and lay beside Volkmann's spoon. M Jessop used to say that the change wrought by Lister surgery was that surgeons learnt to wash their han before operating rather than afterwards; that, in shor an operation was a clean thing, not a dirty thing. Surger when made safe by Lister, ceased to be merely remedia and became the most powerful instrument for research in the diseases of man ever placed in our hands. It is almo impossible to convey to a young surgeon of to-day t bewilderment in the minds of older surgeons when fir they were confronted by conditions within the abdom which no text-book of medicine or pathology could explai When McGill began his work on prostatectomy the patie was placed in the Trendelenburg position (a position intr duced into surgery for operations upon the bladder) and t prostrate nibbled away or enucleated under the eye of t surgeon. This old method has been rediscovered at t Mayo Clinic and by Thomson-Walker; but such lapses professional memories, followed by renewal of forgott methods, are not unusual. The text-books of the time to us little or nothing of variations in the form of the prosta and the different mechanical effects thereby produce In the abdomen the confusion was far worse. I recall a occasion at the meeting of the Leeds and West Ridi Medico-Chirurgical Society when Mayo Robson spoke having introduced his finger into the common bile duc A pathologist made this an opportunity for derision at t absurd statements by surgeons, which he said were becomi alarmingly frequent. He pointed out that the comm duct could comfortably contain a knitting-needle, that t presence of a human finger within the duct implied eith an attenuation of the digit, or an expansion of the duc

ith neither of which had his observations made him amiliar.

The Debt of Medicine to Surgery.

During the year of my house surgeoncy the hybrid word ppendicitis was not mentioned. That the appendix was ttacked by inflammation and gangrene, that it might suffer erforation, and be the cause of a generalised peritonitis, ad been recognised by Wilks and Moxon, and made clear y R. Fitz, of Boston, in 1888. Fitz it was who first recog-ised and described acute pancreatitis. For our modern nowledge of abdominal diseases, their symptoms, their lliances, and the modes of operative treatment best suited) them, we are indebted almost wholly to the surgeons. have before suggested a comparison between the knowledge isplayed in the first edition of Fagge's Medicine, and our nowledge of to-day, to show the debt which medicine owes) surgery. Surgery then, as created by Lister, is not only remedial measure, safer beyond all calculation than it as before his time, but it is a method, the best indeed of l methods, of inquiry into the symptoms, the origin, lation, and progress, and the treatment of intra-abdominal sorders. Surgery has had, however, to fight too much one. The physician in many cases, happily not in all, ad seemed to lose interest as soon as the surgeon takes harge of a case, with the unfortunate result that a spirit antagonism as between medical and surgical treatment as been allowed to creep in, and to embitter relationships etween the practitioners of each method. This is not only olish, but wrong. Our business is to understand, to ntrol, and where possible to alleviate or remove diseases om patients who suffer. We are all, therefore, working the same end, and we shall work better if we work together. he physiologist, too, has seemed to stand aloof. As Dr. G. Douglas and I pointed out last autumn, almost multaneously, human physiology has been too much glected. Research upon animals, for some quite inex-icable reason, has been put in the foreground. For this isdirection of effort, responsibility, or perhaps I should y, blame, in my judgment attaches both to the Medical esearch Council, which in some degree inspires and finances research work," unaware, or indifferent to the value of search in the wards or operating theatres, and to the Royal ciety which now gives its Fellowship as a reward almost clusively to those who spend their sheltered lives in the oratory and are ignorant of clinical research ; neither body well-advised. To-day every surgeon realises how much depends for an insight into the maladies afflicting his tients, and for his power of control of them, upon the thologist and his co-workers. They are able to tell m what things have happened, what changes have already ken place in tissues, secretions, excretions, &c. ; and from is much is learnt to guide the principles or the details of eatment. I think physiologists, by a study of the normal, d the almost normal, would surely give us help in dis-vering far earlier changes, and would enable us to prevent me, at least, of those late and terminal conditions with hich to-day we are far too much involved. If preventive edicine is to-day in the forefront of our minds, is there t preventive surgery also ? And if there is, will a study fully developed diseases, such as the surgeon meets in spital, be the best means of advancing our intimacy th it ? Can we expect to learn embryology by the study fossils ?

The Pathology of the Living.

The next step to be taken in hospital administration ll, I hope, involve the appointment of general practitioners o upon the staff, and the provision of beds where early ses can be admitted for observation and inquiry. Here an almost virgin field for investigation by experts, and in s matter the general practitioner, and not the consultant, the expert.

When I was a house surgeon our knowledge of the nptoms and results of disease were based upon descriptions efly written by physicians attached to our teaching hos-als, and by pathologists who examined the bodies of ose dead, very often at long last, of their diseases. Patients not, and were not then, admitted to hospital unless their eases were in full course, and gravely threatening life health. What could the physician to a teaching hospital ow of inaugural symptoms, and what opportunities sented themselves to a pathologist for recognising early uctural changes ? When the adventures of the surgeon ced at his disposal earlier material for a study of morbid nges than those which had caused death, his observations re often derided and denied by post-mortem pathologists. support of our claim to a knowledge of far greater value n that derived from autopsies, I spoke of the " pathology the living." And when discussions arose as to the urrence or frequency of malignant degeneration in a onic gastric ulcer, I suggested that a " histology of the ng " was needed to settle the question. I have known th occur from " recurrence " of carcinoma in the liver a patient whose stomach had been removed for what the pathologist refused to accept as " cancer." Happily the process of tissue culture may help us here ; and we may perhaps recognise a different behaviour in many respects when a simple is compared with a malignant cell, as each is minutely observed undergoing growth and multiplication.

Alliance of Surgery with the Sciences.

The plea I make to-day is for all sciences to be brought into an even closer alliance with surgery. The craft of surgery has reached something near the goal. If operations have to be practised in the future, it is not possible to imagine any considerable improvement upon the methods and results of to-day, as exemplified in the hands of the great masters. Other methods of treatment may come to the fore, and much may be expected from prevention ; but expert craftsmanship with a perfect technique can do little more to improve our work. The art of surgery has outrun its science. The corollary is obvious. It is that the ancillary sciences must help surgery more than they are now doing. Chemists, physicists, but especially and immediately physiologists, must come closer to us, and be encouraged to find in routine work upon human beings who show a minor departure from standards of health, some explanation of this deviation and some methods of averting or arresting the morbid process. There are hosts of questions that the surgeon asks, and until the physiologist learns, by daily work in the wards and in the theatres, what those questions are, it is not to be expected that he will make the effort needed to answer them, or even perhaps realise that an answer is urgently demanded. Physiology needs a new orientation ; its interests are now too largely centred on problems of secondary interest to mankind. I should like to see a physiologist also added to the staff of every teaching hospital.

Now let us suppose that a surgeon who had ceased to practise 40 years ago, who had seen and heard nothing of surgery in the meantime, could be brought back to an operating theatre to-day, and could stay with us for a day's work. What would be his impressions ? I fear that he, too, would be shocked. He would discover at once that the architecture and equipment of theatres had been radically altered. He would find the apparel and behaviour of surgeons, nurses, and spectators changed to a degree that would at first seem ludicrous. He would see the old operations, upon which he embarked with anxiety and alarm, performed with a degree of confident ease and their issues regarded with a degree of certainty that would astound him. He would watch operations, the very names of which might be meaningless to him, and the very thought of which would strike him with acute misgiving and dismay. He would remember that in his day a man who practised ovariotomy was held, by responsible and sober-minded people of his own profession, to have earned an indictment for manslaughter. He would realise that the surgeon was on terms of almost indecent intimacy with the brain, the heart, lungs, and abdominal viscera ; and this knowledge of the diseases of these organs, which every word and action revealed, would leave our honoured visitor utterly bewildered and incredulous. You will complete the picture for yourselves. I ask you only to remember that it was the labour of one who was physiologist as well as surgeon who made all this possible ; and that if we are to carry his work still further and perhaps complete it, it can only be by conjunction in effort of physiologist and surgeon in the wards and operating theatres to-day.

WORLD LEAGUE FOR SEXUAL REFORM.

Dr. Norman Haire asks us to announce the foundation of a World League for Sexual Reform (W.L.S.R.), designed to make the results of scientific sexual research of practical service to mankind. Its chief object is to encourage the development of sexual sociology and sexual ethic based on biology and psychology rather than, as in the past, on theology. The first World Congress of this league is to be held in Copenhagen from July 1st to 4th, the place of meeting being the Studentenforeningen, Vestre Boulevard 6. At the inaugural session, 10 A.M. on Sunday, Dr. Hirschfeld (Berlin) will lecture on Sexual Reform, to be followed by a debate in the afternoon. On Monday Mrs. Dora Russell (London) will lecture on Sexual Education. On Tuesday Dr. Leunbach (Copenhagen) will lecture on Birth Control, and on Wednesday Prof. Pasche-Oserski (Kieff) will lecture on Sex and Criminal Law. Anyone wishing to join the League, or to participate in the Congress, should apply to Dr. Leunbach, Stockholmsgade 39, Copenhagen, Denmark.

THE Health Service Bureau of the Wesleyan and General Assurance Society writes to point out that all distributions of the pamphlets described in our last issue are made entirely free of charge.

PRACTICAL AND VIVA VOCE EXAMINATIONS.

DURING this part of a summer session medical students at all stages are facing examiners with feelings of anxiety which might have been less acute if they had devoted more attention to the pattern of the practical and viva voce examinations before them. In the course of a leaflet on the duties of examiners issued by one of our largest universities, the general scope of such examinations is well defined. A practical examination is designed to be a test of practical experience, skill, and accuracy; a viva voce should be a guide to the range and precision of the candidates' knowledge. If this distinction were borne in mind by students and their teachers, rehearsals appropriate for each ordeal might be planned. Before a practical examination, set tasks could be deliberately and carefully performed in a given time, whether in a laboratory or at the bed-side. This task should not be hurried. The work set always takes up less time than is allotted if things go well; even when accidents occur, there is usually ample margin. Moreover, to quote from the recommendations referred to above, such exercises are set "in the carrying-out of which one mistake will not lead to the total loss of definite results." Before viva voce examinations, preparation should be sought in the form of "rags" during which a rapid fire of quite unconnected questions is directed to one student. Systematic interrogation of each member of a class in turn does not develop the quick reaction time which is essential for success. Candidates who complain that the questions asked them at viva voce examinations become progressively more difficult can take comfort from the knowledge that this is not exasperation, but deliberate instructed policy, for "examiners are reminded that in order to make it more easy for candidates to overcome the nervousness from which they are likely to suffer, it is advisable that the first questions put to them should be of a comparatively simple character." The nervousness is not likely to be all on one side, since the examiner who reads his instructions will find that his powers are limited and his duties arduous. Graduates who are appointed to this high office before the memory of their ordeals on the other side of the table has had time to fade are nearly always surprised by the low level of the answers at ordinary pass examinations. They also learn that a sympathetic attitude towards candidates is required if the pass-list is to be issued with a reasonable proportion of names above the line, and that their first and most important duty is to cultivate and maintain this attitude.

IMPROVEMENT OF TRANSPORT BY AMBULANCE.

THE keen discomfort, sometimes amounting to acute pain, caused to victims of accident or acute illness by the jolting of a badly sprung ambulance is seldom the subject of definite complaint. The sufferer has to undergo still more strange and perhaps more distressing experiences in the hospital or nursing home, and his gratitude for the prompt attention and swift removal is stronger than his memory of the uncomfortable journey. Special inquiry on the part of the practitioner, however, will occasionally elicit the fact that in spite of most careful handling by the attendants the journey was a nightmare. This was the experience of a patient known to us who after a perforation of the intestinal tract found a short drive through a well-paved town in an ambulance much less tolerable than a much longer period in a smooth-running private car on country roads. Squeaks and rattles are disturbing, but not serious inconveniences; more important are defective springing and shock-absorption, but it was the vibration of an old engine and the jerking due to a fierce clutch which caused most distress in the particular case brought before our notice. The ambulances under the control of the Order of St. John and the British Red Cross Society are for the most part kept in good repair. According to the report for the last quarter of the Home Service and Ambulance Committee complaints are rare, and the committee note with satisfaction the increased attention given by stations to the care of their ambulances. They point out, however, that many of the ambulances are housed at commercial garages and driven by hired drivers. Arrangements are made for cleaning and ordinary attention, but the average garage proprietor is not likely to be on the watch for the minor defects that develop in motor vehicles and may distress or even harm the patient. That the attendants whose duty it is to travel with the patients, do not always observe the development of jolts and rattles and discover their origin is evident from the condition of many of the ambulances when they are returned to headquarters at the end of their service. The first and most frequent neglect is that of oiling and greasing the chassis, especially in the less accessible parts. Especial attention is drawn to the neglect of the oilers on the spring perches, particularly those at the rear. The springs themselves are sometimes left too long without being re-greased. Back springs are allowed to settle, bringing the tail of the body down; these should be properly set up. Improvement in this respect can sometimes be achieved by fitting longer perches, which are effective in reducing the body sway and also, when the load is heavy, in preventing the bumping of the wings against the tyres. In a number of ambulances returned to headquarters the commutator is in a dirty state, the coil system has been exposed to leakage of water through defective joints in the dash, and the bodywork has been neglected in that screws of latches and fittings of windows, doors, and seats have been allowed to get slack. It would be unfair if this statement were taken to imply that the majority of ambulances are in an unsatisfactory condition. Tributes to the punctuality and care shown by the voluntary workers are constantly being received and are well deserved. At the end of March, 1928, there were 302 of the committee's ambulances in the country, as well as 62 affiliated stations; during the last quarter these 364 ambulances carried 648,142 cases. It is in view of the increasing activity of this branch of first-aid work that attention has been called to the need of improving the standard of comfort in some of the older vehicles and to maintaining it in the newer ones. The committee offer many hints directed to this end, of which the most useful is the information that air mattresses can be obtained to fit standard road stretchers. The addition of such a mattress to the equipment will make long journeys tolerable even in an ambulance which has seen its best days. Local detachments will be well advised to provide themselves with such a useful and inexpensive means of neutralising the shocks of the road.

A MEDICAL SOLDIER.

THE death of Major-General Leonard Wood last year removed a man of great achievement, who will be remembered as one of the most remarkable Americans of our time. An address by Major-General C. P. Summerall, of the United States Army,[1] gives a good idea of his career. The son of a village doctor in New Hampshire, he was a man of outdoor sports, but also an omnivorous reader. He took up the study of medicine, graduated in 1884, and passed, second of 59, into the U.S. Army medical service. Reporting in Arizona on July 2nd, 1885, he persuaded Captain Lawton to take him next day on an expedition. It lasted 21 months, and when the last company commander left through exposure and fatigue, Wood volunteered for the duty, and at the end, received the Medal of Honor for distinguished conduct. On 1898 he became colonel of the Rough Riders in Cuba; six weeks later his regiment drove out the Spaniards, and he spent the night dressing the wounds of 30 of his men. A fortnight afterwards he was promoted brigadier-general, and was made governor of Santiago, and such was his success as administrator that in due course he was appointed military governor of Cuba. He thought yellow fever might be due to a mosquito, and cordially supported Read and his colleagues in their work. His initiative, says General Summerall, made the Panama Canal possible, and Lord Cromer described his administration as governor-general of the Philippine Islands as the greatest colonial work of the century. For four years he served as Chief of the General Staff of the United States Army—a prophet of preparedness—and in 1913 he started the officers' training camps, which furnished 100,000 officers in the World War. His advice to others, as to himself, was "Always volunteer, no matter how dangerous or unpromising the task; you are likely to discover opportunity. Do things, don't talk about them." No soldier could outwall him, none had more ceaseless energy, he was never too busy to be courteous and kind to juniors, and secured the devotion of those who served with him. That his name may be kept continuously in the minds of United States Army officers, it has been decided that the military station near Washington shall, in future, be called Fort Leonard Wood.

CARBON MONOXIDE GAS POISONING.

WE regret that Prof. Hamilton Hartridge's paper on this subject, appearing on p. 1137 of THE LANCET of last week, was published without the corrections made by the author in Table II. the words "in actual hæmoglobin" should read "found in hæmoglobin"; in section 8 the symptoms of poisoning by exhaust gas ought to be given as "dullness, dizziness, sickness, and weakness of the limbs" (not bowels) whilst in section 10 the remedies mentioned should be "oxygen in cylinders, or, better, oxygen with 5 per cent. (not 50 per cent.) carbon dioxide." The publication whose name is given in reference 1 is issued by the United States Bureau of Mines.

[1] Military Surgeon, April, p. 526.

BROMLEY (KENT) COTTAGE HOSPITAL.—A Diamond Jubilee Fund of £12,000 is being raised for extensions and improvements. At present the operating theatre can be approached only through the surgery and accident ward.

Croonian Lectures

ON THE

INTERPRETATION OF GASTRIC SYMPTOMS.

Delivered before the Royal College of Physicians of London

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LECTURE II.

(Delivered on June 7th.)

ANALYSIS OF CASES OF PAIN.

(Continued from p. 1168.)

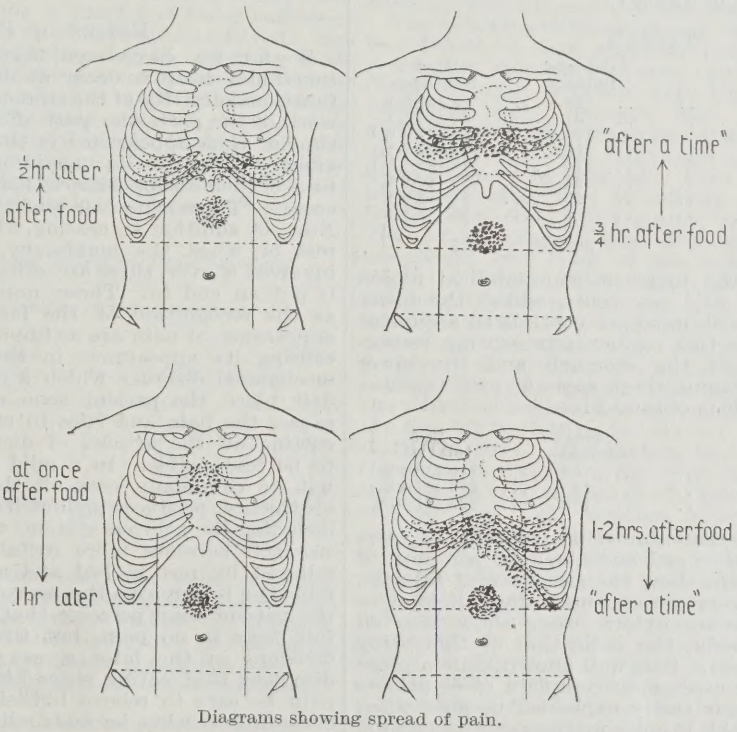
I HAVE already dealt with 715 cases of my series, who suffered from pain in isolated areas, and divided them into three groups, pyloric, cardiac, and œsophageal according to the position of the pain and its time of onset after food.

The remaining 294 cases of the series show multiple areas of pain, 261 of whom complained of pain in all possible combinations of the local areas already considered. The remaining 33 cases cannot be shortly classified but three types may be mentioned. Diffuse pain affected the ribs at both sides of the chest or more commonly the left only, and, speaking generally, the sixth rib separates this region into two parts, an infra-mammary in which chiefly early and irregular pain occurs, and the ribs below in which the pain is more likely to be late in appearance. The pain may take the form of a longitudinal line passing through the nipple and the ninth costal cartilage. Pain occurred in the sternum and along one or both costal margins and might also affect the central line. It would take too long to give all the figures relating to the analysis of these cases, so that the brief statement must suffice, that a comparison of their time relations as to the taking of food with those already described leaves no doubt whatever that the same interpretation may be given to the position of the pain and its time of onset whether single or multiple areas are concerned. When *all parts of the gastric apparatus are simultaneously affected* it is very difficult to say whether the disorders are independent of or related to each other in any way. There are, however, two circumstances which are worthy of notice.

1. The pain is usually described as *commencing at the same time* in each position. When the pains commence at the same period of digestion they show the characteristics of pyloric, or cardiac, or œsophageal pain just the same as in the case of the single areas, and it is therefore only reasonable to suppose that the same interpretation may be given to them. In 89 cases in which œsophageal pain was combined with that due to the pylorus or body, 50 per cent. of combined œsophageal and pyloric cases complained of late pain, and we must therefore assume that in these cases the œsophagus is affected by a backward effect from the pylorus, because primary œsophageal pain should occur early. A certain number of examples of cardiac pain occur late and œsophageal pain when combined with these also occurs late. So that it appears that either the pylorus or the body produce backward effects upon the œsophagus. On the other hand, when the pain occurs early or irregularly it indicates excessive irritability of the stomach either as an advanced pyloric manifestation or as a primary nervous irritability affecting all parts simultaneously.

2. The pain may be described as spreading *upwards* or *downwards* during digestion. Forty cases of this kind have been analysed. The spread upwards seems to show that the disorder may begin in the pylorus and secondarily affect the body of the stomach and the œsophagus by a backward effect; or in the body and secondarily affect the œsophagus. The pain may spread from any part, and the interval between the two pains varies from half an hour or so up to two or three hours, but most often the statements made are "after a time" or "later on"—for example, local pain in the upper sterno-umbilical region one hour after food followed in half an hour by a band of pain across the lower sternum, and so on. The pain may be described as spreading downwards in from a few seconds to half to one hour. It may spread from the sternum to the abdomen or down the costal margins (Fig. 1). Each mechanism is upset in turn, a general irritability of the stomach or œsophagus being present—for example, in the lower sternum half an hour after food, followed in half an hour by pain in the middle sterno-umbilical area. A rapid spread from above down denotes considerable nervous irritability, as, for example, in a neurotic patient who complained of a sore feeling in the whole of the sternum at once after food, followed by pain in the middle sterno-umbilical region which passed down on each side of the umbilicus, and ended in general colic and diarrhœa. The cases of combined pain, therefore, appear to indicate that a primary affection of the pylorus commonly produces backward effects through the body of the stomach upon the œsophagus, and similarly a primary cardiac affection produces effects upon the œsophagus. Also that all the parts may be affected together early or

FIG. 1.



Diagrams showing spread of pain.

irregularly or successively as they are brought into action owing to a general nervous irritability.

If this is the case the probability is that the same kind of process is really going on in the cases with isolated areas of pain, the irritability of the other parts not being sufficiently pronounced to cause actual pain. A study of the sensation of fullness or distension favours this hypothesis.

Sensation of Fullness.

The sensation of fullness is important, because it signifies a disorder of the body of the stomach, but it is not so valuable as referred pain in this respect, since it may be voluntarily produced by air-swallowing. This effect must, however, not be over exaggerated, because it chiefly occurs to any degree in the neurotic subject and is only seen in a certain number of such patients. It is certainly not of sufficient frequency to materially diminish the value of fullness as a symptom. Another disadvantage is the difficulty of clearly distinguishing this symptom from general abdominal fullness. In a series of 664 cases of pain, 523 complained of fullness. Of the 664 cases, 473 were instances of pain in a localised position, of which 363 showed the symptom of fullness in addition; and 191 of pain in combined areas of which 160 exhibited fullness. The cases of localised pain alone concern us at present. They are as shown in Table I.

TABLE I.

Region.	Cases of fullness.	In a total of—
Upper sternal	22	44 (50%)
Lower „	37	66 (56%)
Upper st.-umbil.	125	143 (87·4%)
Middle „	86	104 (82·7%)
Lower „	40	48 (83·3%)
Right 9 c.c.	25	31 (80·6%)
Left 9 c.c.	19	25 (76%)
Right and left 9 c.c.	9	12 (75%)
	363	473

The fact that the upper sterno-umbilical region shows fullness in 87·4 per cent., whilst the lower sternal only shows it in 56 per cent., is an argument in favour of these two regions representing respectively the body of the stomach and the lower œsophagus. Combining these areas of pain together the following result is obtained :—

Region.	Cases of fullness.	In a total of—
Œsophagus	59	110 (53·6%)
Cardiac end	125	143 (87·4%)
Pyloric „	179	220 (81·3)%

Thus it appears that almost 90 per cent. of cases of pain in the cardiac end and about 80 per cent. of cases of pyloric pain show the sensation of fullness. Allowing for exaggeration and inaccuracy, it is quite clear that very many pyloric cases show also an affection of the body, the indication of this being not pain but fullness. It is well known that in place of fullness pyloric cases may complain of emptiness and hunger. This is easily explained because when the pylorus is irritable it holds up the gastric contents, but the actual sensation produced depends upon the volume of contents remaining in the stomach. When the pylorus shows its irritability late or the stomach empties initially quickly and only a very little remains in the stomach, the feeling produced by the body is an empty feeling similar to that due to hunger. Thus the body of the stomach is usually affected when the pylorus is irritable, but produces two opposite feelings—a pain associated with fullness if a fair amount of material is present, or a pain associated with hunger sensations if very little remains in the stomach—in other words, a hunger pain. The œsophagus is associated with fullness in about half the cases, showing that the body of the stomach is also affected and the cause of the œsophageal symptoms.

It is also certain that many of such cases who feel symptoms late during digestion are secondary to pyloric irritability, for, as we shall see presently, they are liable to show acid regurgitation late during digestion, which is a pyloric symptom. Now it must be quite clearly understood that absence of pyloric relaxation, although it produces fullness or pain in the body and sour eructations with œsophageal symptoms, is not a cause of pyloric pain. It is only when the pylorus and adjacent part of the vestibule become spasmodic that pain results.

The following clinical types of pyloric irritability may therefore be recognised. (1) Pyloric pain with hunger sensations—hunger pain. (2) Pyloric pain with a sensation of fullness, with or without cardiac pain. (3) Fullness or pain in the body of the stomach without pyloric pain occurring at all. Acid eructations and œsophageal symptoms may result in all three cases. In the first, when hypersecretion is present, and in the second and third from regurgitation of the acid contents of the stomach. The third condition can only be diagnosed if a fractional test-meal shows failure in the neutralisation process and acid eructations occur late during digestion.

There can be no doubt that the most important type of dyspepsia is this pyloric type, due to pyloric irritability and its backward effects upon the cardiac end of the stomach and the œsophagus. A second type appears to affect the body of the stomach primarily with secondary effects upon the œsophagus. A third type affects the œsophagus only.

RELIEF OF PAIN.

So far we have seen that these symptoms of functional disorder occur at different phases in the functional activity of the stomach and cease when the work of the particular part affected is finished. The time of their appearance is that at which the part affected displays its maximum activity, and the time of their disappearance that at which this activity ceases. There is no pain when the stomach is empty. Now, in addition to ceasing when the stomach is at rest or when the maximum activity of the part involved is over, there are other ways in which pain is put an end to. These must now be considered as the recognition of the factors causing the disappearance of pain are as important as that of those causing its appearance in the explanation of the mechanical disorder which gives rise to it. In the first place, the patient soon realises that his food causes the pain and tries to reduce the stimulus by cutting off the articles of diet, which he considers to be responsible. In a mild case he may succeed, but he commonly cuts off the wrong food or, by abstinence, produces malnutrition of the whole body including the nervous system, with the result that his stomach becomes more irritable, and can only be relieved by rest in bed and a graduated diet with remedies to improve the nervous system. Secondly, the patient may perceive that when the stomach is full there is no pain, but that as it empties pain develops in the later stages; in other words, he discovers that eating stops his pain. When he has pain he eats to relieve himself and selects his diet according to what he finds relieves him best and for the longest time. It is quite plain that in this case the patient is bringing into play some automatic mechanism which counteracts the disorder causing the pain. Thirdly, relieving the stomach partially or completely of its contents temporarily or permanently puts an end to the pain. I refer to the two common motor disturbances which of themselves constitute symptoms of dyspepsia—namely, eructation and vomiting—both of which acts are also employed by the patient to relieve his symptoms. We have, therefore, to consider the questions of the relief of pain by food, and by eructation and by vomiting.

Relief by Food.

It has been a matter of common knowledge, probably from the earliest times, that the pain of dyspepsia is very frequently relieved by food. It may be completely relieved for a definite time or only partially relieved; it may disappear temporarily during the eating of the meal to return again shortly, or it may

be relieved on some occasions and not on others. It seems, therefore, that this common occurrence of the relief of pain is quite as definite a link in the chain of events as that of pain itself.

In this series there are 324 cases of isolated pain, of whom 190 were completely relieved of pain by food, 24 partially, 27 temporarily, and 65 unrelieved; 18 cases were sometimes relieved and sometimes not. The distribution of the 190 cases of *complete relief by food* is given in Table II.

TABLE II.

Region.	Cases.	With complete relief by food in—
Upper sternal	31	8 (25·8%)
Lower sternal	49	22 (44·8%)
Upper st.-umbilical	105	53 (50·4%)
Middle st.-umbilical	91	67 (73·6%)
Lower st.-umbilical	48	40 (83·3%)
	324	190

The highest percentage of cases in which relief s obtained by food occurs in those showing pain n the pyloric region (middle and lower sterno-mbilical areas); about half the cases showing pain n the body of the stomach and the lower œsophagus upper sterno-umbilical and lower sternal), which are imilar as regards the onset of pain, are afforded elief by food; and only a quarter of those suffering rom pain in the upper œsophagus are so relieved. So hat one of the factors influencing the relief by food s the part of the apparatus involved and therefore he particular function which is upset. On analysing he cases as regards the time of onset of pain, the nteresting fact is brought to light that, in all the egions involved, the cases in which pain comes on ate during the digestive process are those which are hiefly relieved of their pain by food. The result s given in Table III.

TABLE III.—*Complete Relief of Pain by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
pper sternum ..	—	1	6	1	= 8
ower sternum ..	—	2	17	3	=22
pper st.-umbilical	—	11	41	1	=53
iddle ,,	—	—	65	2	=67
ower ,,	—	—	40	—	=40
Total	—	14	169	7	190

We have already seen that late pain occurring . cases of cardiac and œsophageal irritation com- only indicates that the pyloric end of the stomach the primary cause of such irritation; in this series ie percentage of pyloric cases obtaining relief by od is much greater than that of either the cardiac

TABLE IV.—*Partial or Temporary Relief of Pain by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
per sternum ..	4	—	1	2	= 7
wer sternum ..	3	1	4	2	=10
per st.-umbilical	2	3	9	3	=17
ddle ,,	2	—	7	3	=12
wer ,,	—	—	5	—	= 5
Total	11	4	26	10	51

œsophageal cases, so that it is probable that any of the latter cases, in which pain occurs late, tained relief by food because they are secondary the pyloric end of the stomach. When we consider *partial or temporary relief of pain by food*, of which there are 51 cases, it appears that a greater relative proportion of cases with early pain are so relieved that when the relief is complete and especially those affecting the body of the stomach and the œsophagus. The analysis is given in Table IV.

A consideration of the 65 cases in whom the pain is *unrelieved by food* shows that they are chiefly the subjects of early and irregular pain. The analysis is shown in Table V.

TABLE V.—*Pain Unrelieved by Food.*

Region.	Occurrence of pain after food.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper sternum ..	12	—	—	2	=14
Lower sternum ..	7	—	3	3	=13
Upper st.-umbilical	10	2	3	11	=26
Middle ,,	1	—	1	8	=10
Lower ,,	—	—	—	2	= 2
Total	30	2	7	26	65

The *irregular type of pain* is relieved at some times and not at others, for out of 18 cases of this kind of relief 14 were examples of the irregular type of pain.

The following deductions may be made. Pain may be relieved by food whatever part of the apparatus is affected and at whatever time the pain occurs. Complete relief is much more likely to be afforded when the pain appears late, whatever part is affected, but of all parts pyloric pain and its secondary consequences on the body and œsophagus are the most likely to be relieved. Pain occurring early or irregularly after food is unlikely to be relieved by food, or if so the relief is mostly temporary or partial. This is, of course, seen more particularly in the œsophagus and body of the stomach. Late pain, which is unrelieved by food or only partially or temporarily, means that the pain usually comes on late after a meal, but once started remains constantly present for the whole day. Early and irregular pain is characteristic of nervous irritability of the stomach, so that the more irritable this organ is rendered by the unstable condition of the central nervous system the less likely it is to be relieved of its pain by the taking of food. The factors to be reckoned with, therefore, in respect of the relief of pain by food are the type of case as regards the part of the apparatus affected and the function disordered, and the condition of the central nervous system as regards irritability. The explanation of these facts is clear when we consider how the pain is likely to be relieved.

It seems reasonable to assume that, if we are right in supposing that an overaction of the neuro-muscular mechanism is the cause of gastric pain at various stages of digestion, a cessation of this overaction relieves the pain. We have seen that such a mechanism for inhibiting the muscular movements exists and is brought into play in the normal filling of the stomach. This normal inhibitory mechanism must also be called into action in the condition of irritability of the stomach, but with varying degrees of success, according to the ability of the muscle-fibre to respond normally to the call. Neither can one expect this to be accomplished unless the normal balance between the extrinsic motor and inhibitory nerves is correctly adjusted. This is unlikely to be the case when the central nervous system is irritable. So that primary cardiac and œsophageal cases in which such irritability is the most common are less likely to be relieved by food than pyloric cases. The later the pain comes on the less irritable is the neuro-muscular mechanism and the better it responds by a lengthening reaction to the introduction of food, so that on the whole the pyloric type of case is more easily relieved. Nevertheless, pain coming on in half an hour after food is not uncommonly relieved, and pain which begins almost at once after food may be partially or temporarily relieved by the act of

filling the stomach. In other words, whilst eating his meal the patient is usually free from pain, which comes on again some short time after the meal is ended. This is due to the receptive relaxation of the stomach on swallowing through the vagus. The same remarks apply to those cases of late pain, in which the nervous irritability has become so excessive that the pain has commenced to appear early and lasts constantly in the severer attacks. Œsophageal pain is relieved for two reasons. In the first place, this symptom may be secondary to gastric irritability and when the latter is removed by food the œsophageal pain disappears. Secondly, the act of swallowing temporarily clears the œsophagus of material likely to irritate either the mucous membrane or muscular coat, but the symptoms are very likely to recur as will be described later. In addition to this inhibitory influence in putting an end to the muscular over-action which is causing the symptoms, it is self-evident that another factor must be concerned—namely, the removal of the cause of the disturbance, otherwise it is doubtful whether inhibition would achieve its object so frequently.

The actual exciting cause of the muscular over-action and that which determines its appearance at a stated regular time, is the condition of the gastric contents as regards their irritant nature. This increases as digestion proceeds owing to the increasing acidity and to the fact that the least irritating and most digestible portions leave the stomach first. The effects of each of these two factors are neutralised by the eating of food. The meal dilutes the residual contents of the stomach and if it be rich in protein, combines with the free HCl. An alkali without materially increasing the bulk of the gastric contents frequently relieves the pain by neutralising the free HCl; but food not uncommonly relieves the pain when there is a normal acidity or no free HCl in the stomach at all. Of 130 cases of pain in the sterno-umbilical region, 48 showed hyperacidity, 29 normal acidity, and 53 diminished acidity or achlorhydria. Of these cases 42 were *relieved by food* as shown in Table VI.

TABLE VI.—*Relief of Pain by Food.*

Acidity.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Hyperacidity ..	—	1	17	—	=18
Normal acidity ..	—	4	9	—	=13
Diminished acidity or achlorhydria..	—	3	8	—	=11
Total	—	8	34	—	42

In all these cases of relief by food the pain occurred usually later than one hour after food. Forty-three were *unrelieved* as in Table VII.

TABLE VII.—*Pain Unrelieved by Food.*

Acidity.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Hyperacidity ..	4	2	2	5	=13
Normal acidity ..	2	1	1	4	= 8
Diminished acidity or achlorhydria..	6	7	1	8	=22
Total	12	10	4	17	43

In these cases in which the pain was not relieved it occurred especially in the early stages of digestion or irregularly.

In the remaining 45 cases the *relief was temporary*, partial, occasional, or by vomiting. Of these, 17 showed hyperacidity, 8 normal acidity, and 20 diminished acidity. It is quite clear, therefore that food may relieve the pain whether the gastric contents are acid or neutral in reaction; that when the pain occurs late it is in either case more likely to be relieved than when it appears early or irregularly and that even when hyperacidity is present the pain may not be relieved at all. In the case of the relief of late pain the contents are neutralised and diluted if they are acid; but diluted only if they are neutral and in both cases the bulk of the meal brings into play the inhibitory mechanism. The latter is the only factor concerned in the relief of pain occurring in the earlier stages of digestion, when the symptoms depend more upon the condition of the nervous system than upon that of the nature of the gastric contents, and the relief in this case is therefore more doubtful.

ERUCTATION.

Eructation is due to excessive pressure in the stomach in relation to the tone of the cardiac sphincter at the time. Both fluid and gas may be brought up, but it is particularly gas in the stomach upon which the patient concentrates his mind and endeavours to eructate in order to relieve his symptoms. He thus acquires the habit, which at the same time involves the swallowing of air. Nevertheless, a good deal may be learned as to the course of events in the stomach from a study of eructation because in addition to its occurrence as a symptom and the habit arising from it, the condition gives rise to changes in the œsophagus which cause secondary œsophageal symptoms. It is necessary to speak separately of the eructation of fluid and gas, although it is not easy to do so because they so often occur together. This analysis is as accurate as can be obtained, for it must be remembered that in dealing with all these symptoms a generous allowance must be made for errors, which are inseparable from the study of symptoms, particularly such irregular ones as those now under consideration.

Eructation of Fluid.—The patient complains of the fluid tasting like acid or vinegar, or as being bitter tasteless, or of some other taste imparted by the stomach contents. There is no difficulty in selecting a definite group in which acid eructations occur, but the second group presents difficulties, although the taste may be uniformly bitter or otherwise, for the patient may be doubtful whether it has any acid taste or not, or occasionally it may be acid but usually not.

Of 677 cases fluid was eructated by 307, giving a percentage of 45·3. The fluid was definitely acid in 164 cases, and in 143 it belonged to the second group.

Of the 164 cases with *acid eructations* 101 were associated with isolated areas of pain and 63 with combined areas. The total number of cases with isolated pain examined was 461, so that of these 101 eructated acid-tasting fluid. A combination of the areas of isolated pain which represent the two portions of the stomach and the œsophagus respectively give the following percentages:—

Total cardiac cases	143	with acid eructations in	23 (16%)
,, pyloric ,, ...	201		57 (28·3%)
,, œsophageal cases ..	117		21 (17·8%)
	461		101

So that acid eructations are more common in pyloric than in cardiac or œsophageal cases, and in the two latter they are more or less equal in number.

Of the 143 cases with *eructations of bitter, tasteless or doubtfully acid fluid* 86 occurred with isolated pain and 57 with combined pains. Combining the areas of isolated pain which represent the two portions of the stomach and the œsophagus respectively, the following percentages are obtained:—

Total cardiac cases ..	143	with bitter, &c., eructations in	33 (23%)
,, pyloric ,, ..	201		29 (14·4%)
,, œsophageal cases ..	117		24 (20·5%)
	461		86

It may be very generally stated that this type of

eructation is a little more characteristic of cardiac and œsophageal pain than of pyloric pain, whereas acid eructations are more characteristic of pyloric pain. I shall show later that the so-called hyperchlorhydria is really a condition of irritability of the pyloric sphincter in which its function, as regulator of the acidity of the gastric contents in the later stages of digestion, is interfered with. Hyperacidity of the gastric contents is the usual but not the necessary result, since the condition may occur when the gastric juice is lessened in amount, in which case the acidity may be diminished, and the eructated fluid doubtful. On the other hand, in affections of the body and œsophagus the gastric contents are neutralised normally, and the eructated fluid is neutral and frequently bitter from the presence of peptones or bile; moreover, hypochlorhydria is commoner in affections of the body. If eructation, however, appears early before neutralisation has occurred then the fluid may taste sour.

Now it is quite clear that a primary irritation of the œsophagus will not give rise to the eructation of acid material, so that such patients must either be cases secondary to irritability of the stomach or the eructation must have been voluntarily produced in the effort to bring up gas and so relieve the symptoms. This question can only be settled by a careful consideration of the case at the time of examination. On the other hand, the eructation of tasteless and neutral fluids may occasionally be entirely due to the œsophagus, the fluid consisting of saliva and mucus which has been swallowed and retained in the œsophagus owing to hypertension of the cardiac sphincter, as Hurst [1] describes.

Fluid Eructated.—The material is usually a thin, watery fluid, and food may be present if the eructation occurs early or even late, if the stomach empties slowly, and there is diminished acidity. The acidity is due to HCl, as the formation of organic acids by carbohydrate fermentation is practically unknown in functional disturbance of the stomach. The amount of fluid eructated naturally varies considerably, and is at its maximum in the condition of hypersecretion of gastric juice, particularly if the stomach empties slowly. In such a condition large amounts may be eructated and spat out in mouthfuls at irregular times and in a nervous subject vomiting may result. Sometimes the patient feels a preliminary sudden tense feeling or even a pain as the stomach contracts, which may awaken him in the night; but large amounts may be present in the stomach without any eructation if the stomach is not irritable. The patient may also eructate fluid soon after a meal, and in such cases, when an opaque meal is given, the food may be seen by the X rays to fall to the lower pole of the stomach through the fluid. The reaction of the fluid depends upon the neutralisation process, if the pylorus is acting normally the reaction is neutral, but if pyloric hypertension is present it is acid. Another possible factor is the passage of neutral chloride under certain circumstances through the gastric mucous membrane. When large amounts of fluid are eructated the condition is spoken of as pyrosis or, particularly if the fluid is neutral, as waterbrash. It has been considered that this waterbrash is largely composed of saliva which has been swallowed in considerable quantity. It can, however, be shown that the fluid of waterbrash is chiefly derived from the stomach by estimating the amount of total chloride it contains, for human saliva only contains between 0·05 and 1 per cent. chloride. In one case eructation occurred two hours after food and in the night, beginning with a sensation as of "something turning over in the stomach." The eructated fluid contained 0·116 per cent. total chloride. From the lower end of the œsophagus were extracted 2 or 3 c.c. of mucus; and at the same time from the stomach was extracted a fluid containing 0·23 per cent. total chloride. In another case the eructated fluid contained 0·158 per cent. total chloride, and the contents extracted from the fasting stomach 0·23 per cent. total chloride. The smaller figures in the eructated fluid are due to dilution during its passage from the stomach. The eructation constituting waterbrash is not essentially different from any other eructation; it is merely a variety in which the sufferer is the subject of hypersecretion.

Eructation of gas, which is practically always air swallowed with the food or with the saliva, or voluntarily, is such a constant symptom that it would seem of little value in diagnosis, but its study is of some use. Out of a total of 694 cases 588 eructated gas, and, as might be expected, all positions of pain were almost equally liable to it.

A combination of the areas representing the two portions of the stomach and the œsophagus gives the following:—

Total cardiac cases ..	.. 153	with gas eructation in	135 (88·2 %)
„ pyloric „ ..	.. 210		165 (79·3 %)
„ œsophageal cases	.. 119		100 (84·0 %)
	482		400

This is a different result from that obtained in the case of fluid eructations, in which the percentage is relatively small, for the majority of patients suffering from gastric disturbance of any type apparently eructate gas in some measure. Comparing this symptom with the sensation of fullness, it will be remembered that the latter symptom was also felt by the majority of cardiac and pyloric cases, but only by half the œsophageal patients. The sensation of fullness in the body of the stomach gives rise to the desire to eructate in order to relieve the feeling, and the voluntary act which usually takes in air also is much more likely to expel gas than fluid, since gas occupies the fundus and this is the part compressed. So that the similarity in the frequency of fullness and gas eructation in cardiac and pyloric cases suggests that the latter symptom is of voluntary origin. This hypothesis is supported by the fact that most œsophageal cases eructate gas, whilst only about half of them feel the sensation of fullness. There is no mechanical reason whatever why the other half of the œsophagus cases who do not feel fullness should eructate gas, and yet they do so; the only reason can be that they do so voluntarily in order to relieve the sensations they feel in the œsophagus. If the eructation of gas were due to excessive pressure in the body of the stomach without any voluntary effort we should expect the percentage of gas eructation to be much smaller and to approximate more closely to that of fluid eructation. This habit of voluntary eructation is difficult to resist by most patients and is more easily established in proportion to the neurotic tendencies of the individual. In the neuropathic patient it may be so marked as to constitute the condition "eructatio nervosa," when at the least feeling of discomfort an attack of air swallowing and eructation commences. In the normal subject the constant swallowing of saliva, mucus, and air in the condition of pharyngeal catarrh increases the air space in the stomach and causes the feeling of fullness and the habit of constant eructation may arise.

The symptom of fluid eructation may now and again also develop into a habit, but in this case there is no air swallowing and the X rays shows a simple contraction of the diaphragm forcing the gastric contents into the œsophagus. The patient may come up complaining of vomiting. Food may be brought up in this way, soon after eating, for years after the fashion of ruminators, but it is spat out, and not masticated and re-swallowed with enjoyment; or sour or neutral fluid may be brought up in quantities at varying times after meals.

I have already stated that irregular pain is more particularly seen in connexion with the body of the stomach in gastric irritability, and that it is frequently dependent upon causes which increase the pressure in the stomach quite apart from the regular abnormalities in the muscular movements of that organ. These same causes give rise to regurgitation into the œsophagus, for example, sitting in a cramped position,

stooping to work, lying down. The patient complains that he gets tightness or pain in the chest with or without eructation. Now it is quite clear that regurgitation occurs to different degrees depending upon the pressure applied to the gastric contents and the varying degrees of resistance offered by the cardiac sphincter, so that a complete eructation occurs into the mouth or an incomplete one into the œsophagus only. There can be no doubt that these incomplete regurgitations are very common and are an important cause of œsophageal sensations. The patient often complains of pain or fullness rising up into the chest, where it takes the form of a tight band, or a lump which may shift up or down and feel like a "wandering bubble," and which may be described as breaking in the upper part of the chest or the throat with a bubbling noise. One patient complained of a pain occurring every few minutes in the central sterno-umbilical region; it passed up to the ensiform cartilage, there attained its maximum, and slowly disappeared with a bubbling sound. If free eructation occurred the pain disappeared at once. Another patient with copious fluid eructations said if the material came up there was no pain, but if not he had pain in the region of the ensiform or an aching, burning sensation or as of a lump sticking there. These instances could be multiplied indefinitely. The symptoms produced depend upon the resulting muscular tension set up in the œsophagus and its sensitiveness, which in their turn depend upon the condition of irritability of the nervous system. Regurgitation can often be seen by the X rays in the absence of any symptoms whatever. Eructations of gas are, therefore, of no value in most cases in the diagnosis of the condition of the stomach, except that when excessive they indicate an unstable nervous system. They are, however, of importance in that the retention of gas in the œsophagus causes symptoms more particularly in the upper part of the chest. Eructations of fluid are, on the other hand, of considerable importance as indicating the state of affairs in the stomach, and are much less dependent upon the condition of the nervous system. They give rise to symptoms more particularly in the lower part of the chest. Complete eructations relieve the pain, at all events for a short time, by lessening the pressure in the stomach and so diminishing the contraction tension of the muscular fibres. Poulton described this relief to the pain of gastric ulcer as occurring on lessening the pressure by the passage of a tube.

VOMITING.

Vomiting is the natural means whereby the stomach is relieved of its contents when they are sufficiently irritating. The stimulus acts upon the vagus endings in the mucous membrane so that vomiting is likely to be more common when the irritant focus is in the stomach than when it is in the œsophagus, in which case the vomiting is of a different type. It relieves the symptoms if the stomach is completely emptied, unless there is a great deal of nervous irritability of the stomach.

It is commonly preceded by nausea, but not invariably so. As a symptom of diagnostic importance, nausea is not of much value, because it is found so irregularly in such a multitude of conditions; on the other hand, vomiting is of the greatest importance. Vomiting occurred in 230 of the series of 1009 cases—that is to say, in 22·8 per cent. It is thus a much less frequent symptom than pain and indicates a higher degree of irritation of the stomach. It is induced in several different ways so that to assess its value and significance a careful history of the origin and onset of the vomiting must be taken to put it into its true category, for however it may arise the reflex tends to become more excitable and the vomiting lose its initial character. The vomiting may then become incessant, occurring if a bad attack is present whenever anything, even water, is put into the stomach. Vomiting is commonly induced not only by conditions of the alimentary canal but also by reflexes from other parts of the body, by affections of the central nervous system, and by blood poisons. It is thus a very important symptom, so that its associated conditions and the circumstances which indicate that it is of gastric origin deserve close attention. Of the 230 cases, 158 occurred with isolated areas of pain and 72 with combined areas. The isolated areas are shown in Table VIII.

TABLE VIII.

Region.	Cases.	Out of a total of—
Upper sternal	4	53 (7·5%)
Lower sternal	18	119 (15·1%)
Upper st.-umbilical	55	223 (24·6%)
Middle „	43	152 (28·2%)
Lower „	17	77 (22·0%)
Right 9 c.c.	16	35 (45·7%)
Left 9 c.c.	5	14 (35·7%)
	158	673

On combining the areas which represent the two portions of the stomach and the œsophagus respectively, the following is obtained:—

		With vomiting in
Cardiac cases	223	55 (24·6%)
Pyloric cases	278	81 (29·1%)
Œsophageal cases	172	22 (12·7%)

Vomiting is thus of almost the same frequency in pyloric as in cardiac cases, the difference being very little, whilst it is only half as frequent in œsophageal cases. It seems, therefore, quite clear that cases in which the irritable focus is situated in the body or pyloric end of the stomach are more likely to vomit than when it is situated in the œsophagus. This fact is due to the different causes operative in each case. The chief cause of vomiting is *pain*, or at all events the same degree of irritation which causes severe pain is likely to cause vomiting, for in the 230 cases of vomiting this act occurred when the pain was at its height in 146—that is to say, in 63·4 per cent. Of these 146 cases of vomiting dependent upon pain, 97 occurred with isolated pain areas as in Table IX.

TABLE IX.

Region.	Cases of vomiting due to pain.	Out of a total of—
Upper sternal	0	4 (0)
Lower sternal	5	18 (27·7%)
Upper st.-umbilical	32	55 (58·2%)
Middle „	34	43 (79·0%)
Lower „	14	17 (82·3%)
Right 9 c.c.	10	16 (62·5%)
Left 9 c.c.	2	5 (40·0%)
	97	158

Combining the areas which represent the two portions of the stomach and the œsophagus respectively, the following is obtained:—

		With vomiting due to pain.
Total body cases	55	32 (58·2%)
„ pyloric „	81	60 (74·0%)
Total œsophageal	22	5 (22·7%)

These figures show that pain due to the pyloric region of the stomach is more likely to cause vomiting than pain due to the body and that œsophageal pain is least likely of all to cause vomiting.

The next cause of vomiting is *regurgitation of fluid* from the stomach. There were 27 cases of this type in the series, giving a percentage of 11·7. The fluid either irritates the fauces or enters the larynx and causes coughing and retching. Attempts at voluntary eructation also lead to retching. Vomiting is thus excited and may become established. This condition is seen especially in neurotic subjects and occurs more particularly in œsophageal cases. More than half the vomiting in œsophageal cases is due to this cause, but only a small proportion of cases of vomiting due to irritation of the stomach are so produced.

Twenty-one of the 27 cases occurred in isolated areas and were distributed as in Table X.

TABLE X.

Region.	Cases.	Due to regurgitation.
Upper sternal	4	4 (100%)
Lower sternal	18	10 (55·5%)
Upper st.-umbilical	55	3 (5·4%)
Middle „	43	2 (4·6%)
Lower „	17	0 (0)
Right 9 c.c.	16	1 (6·2%)
Left 9 c.c.	5	1 (20·0%)
	158	21

Combining these areas the following is obtained :—

Cardiac cases	55	3 (5·4%)
Pyloric cases	81	4 (5·0%)
Œsophageal cases	22	14 (63·3%)

Another cause of vomiting is the *voluntary one*, in hich the patient makes himself vomit to relieve his mptoms. He thinks there is "something to come p," eructation does not relieve him, and therefore e makes himself vomit by irritating his fauces; or e has experienced relief by vomiting and develops he habit to relieve his pain. He may find after a hile that he cannot stop vomiting and comes up omplaining of it as the chief symptom.

There were 23 cases of voluntary vomiting in the 30, giving a percentage of 10. The distribution of 3 cases associated with isolated pain areas is as own in Table XI.

TABLE XI.

Region.	Cases.	With voluntary vomiting.
Upper sternal	4	0 (0)
Lower sternal	18	1 (5·5%)
Upper st.-umbilical	55	7 (12·7%)
Middle „	43	4 (9·3%)
Lower „	17	2 (11·7%)
Left 9 c.c.	5	0 (0)
Right 9 c.c.	16	2 (12·5%)
	158	16

Combining these areas we obtain the following :—

Body	55	7 (12·7%)
Pyloric	81	8 (9·8%)
Œsophageal	22	1 (4·5%)

Only a small proportion of people with œsophageal mptoms make themselves vomit, and of these the fection is in the lower œsophagus. More people ith pain referable to the stomach vomit voluntarily, pecially those with pain in the cardiac portion. omiting is thus chiefly produced to relieve pain in e stomach itself.

These three factors—pain, regurgitation, and luntary vomiting—account for the great majority vomiting in gastric disturbance, for 134 out of 158 ses fall into these groups—i.e., 84·8 per cent. at is to say :—

42 out of 55 body cases	76·3 per cent.
72 „ 81 pyloric cases	88·8 „
20 „ 22 œsophageal cases	90·9 „

It is thus evident that the majority of cardiac d pyloric cases vomit on account of pain or volunily to produce its relief, whilst most œsophageal ses vomit as the result of faucial irritation from gurgitation; and those who vomit on account of in are affections of the lower part of the œsophagus the most part.

The remaining 34 cases—that is, 14·7 per cent. of e total—complained of vomiting at quite irregular aes, unconnected with any of the causes discussed ove. They were all cases in which the nervous ment was especially marked. The symptoms were ophageal in two cases only, and the remainder gastric origin. Sixteen of these patients were able to assign any cause for the vomiting, which curred at any time. Ten were liable to vomit ilst eating, or quite soon afterwards; either the act of masticating and swallowing caused the vomiting, or the stomach was at the time so irritable that contact of the food with the gastric mucous membrane acted as an emetic. The characteristic feature of this type is its variability according to circumstances, which shows that it is a neurotic manifestation. In five cases the vomiting was preceded by a sudden attack of nausea, and in three quite clearly followed on any emotional disturbance.

WASTING.

The remaining symptoms of gastric disturbance do not assist much in explaining the course of events in dyspepsia, and it is not my intention to discuss generally all the manifestations of this disorder. The state of the tongue and other symptoms upon which such stress used to be laid are of little value. Allusion may, however, be made to *wasting*, because it is such an important symptom in cancer and pyloric obstruction and also in certain remote diseases with gastric symptoms. Functional disturbance of the stomach, including uncomplicated ulcer, does not cause wasting, but this symptom may be associated with it in three conditions. The first is severe vomiting; the second is the voluntary reduction of the food to relieve the symptoms or because the patient is afraid to eat; and the third is loss of appetite with nausea. All these are mostly indications of a neurotic individual. The patient cuts off first one foodstuff and then another which he imagines disagrees with him, till he is living on a very reduced diet and becomes wasted, for he usually cuts off the wrong articles. The wasting impairs his nervous system and the symptoms become aggravated. Two other conditions may be referred to briefly, and these are the *condition of the appetite* and the *sex* of the individual; the former because it is commonly supposed to be an index of the condition of the gastric secretion and loss of appetite is of such regular occurrence as an early symptoms of carcinoma ventriculi; the latter, because of the great instability of the nervous system in the female sex.

APPETITE.

Out of a series of 233 cases, 135 had a good, 37 a fair, and 61 a bad, appetite. Of these cases 146 suffered from pain affecting isolated areas.

Combining these areas together we obtain the results shown in Table XII.

TABLE XII.

Region.	Good ap.	Fair ap.	Bad ap.	—	
Cardiac cases	31	11	12	=54	146
Pyloric cases	42	8	9	=59	
Œsophageal cases	18	5	10	=33	

The percentages derived from the figures given in Table XII. are as follows :—

		Per cent.
Cardiac cases	Good appetite in 31 of 54	57·4
	Fair or bad appetite in 23 of 54	42·6
Pyloric cases	Good appetite in 42 of 59	71·1
	Fair or bad appetite in 17 of 59	28·9
Œsophageal cases	Good appetite in 18 of 33	54·5
	Fair or bad appetite in 15 of 33	45·4

The appetite was good in most of the pyloric cases. These include the most robust individuals, usually with hyperacidity of the gastric juice and sometimes with hypersecretion, and contain the smallest number of neurotics. A smaller number of cases affecting the body or œsophagus had a good appetite, for, practically speaking, about half had a good and half had a fair or bad appetite. These include the largest number of neurotics. The œsophageal cases with a good appetite were especially those in which the lower œsophagus was affected, most of whom were likely to be secondary to the pyloric region of the stomach.

SEX.

Out of a total of 830 cases, 476 were males and 354 females. Table XIII. is an analysis of the isolated areas of pain :—

TABLE XIII.

Region.	Males. Occurrence of pain. At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	Cases.	Females. Occurrence of pain. At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	Cases.
Upper sternum ..	7	2	2	16	=27	10	1	1	13	=25
Lower sternum ..	8	9	20	11	=48	7	6	12	17	=42
Upper st.-umb. ..	11	13	41	13	=78	24	16	20	23	=83
Middle ,, ..	5	3	60	7	=75	7	9	22	15	=53
Lower ,, ..	—	3	31	3	=37	1	1	14	1	=17
Right 9 c.c. ..	—	3	22	—	=25	—	1	6	—	= 7
Left 9 c.c. ..	—	—	13	1	=14	1	—	6	2	= 9
Total	31	33	189	51	304	50	34	81	71	236

Combining the areas given in Table XIII., we obtain the following :—

Males.

Cardiac cases ..	78	out of a total of	304 ..	.. 25·6%
Pyloric ,, ..	151	,,	304 ..	.. 49·6%
Œsophageal cases	75	,,	304 ..	.. 24·3%

Females.

Cardiac cases ..	83	out of a total of	236 ..	.. 35·1%
Pyloric ,, ..	86	,,	236 ..	.. 36·4%
Œsophageal cases	67	,,	236 ..	.. 28·3%

In males the pyloric region is affected twice as often as the body of the stomach. In females the pyloric region or the body are affected to about an equal degree. The œsophagus gives rise to symptoms about equally in both sexes. This result was to be expected, since females have the more unstable nervous system, and therefore that part of the stomach most affected by nervous disturbance should be relatively more affected in them than in males. Still, females suffer as much from the pyloric end as the body, and so it is hardly justifiable to say that the relatively high proportion of the affections of the body in this sex is due to the fact that their stomachs are more of the so-called hypotonic type than are those of males. Neither is it justifiable to say that the form of dyspepsia from which the patient suffers is due to the shape of the stomach. Mills described four normal types of stomach according to the bodily habitus of the individuals possessing them. (1) The hypersthenic type, comprising about 5 per cent. in which the stomach is high in position, has the fastest motility, and most marked tonus of any type. (2) The sthenic type, comprising about 48 per cent., in which the stomach is fairly high, with good tonus and fairly rapid motility. (3) The hyposthenic type, comprising about 35 per cent., in which the stomach is fairly low, with rather poor tonus and motility. (4) The asthenic type, comprising about 12 per cent., in which the stomach is often largely pelvic, has poor tonus and slow motility. It is quite certain that normal individuals vary about a certain average, not only as regards the position and shape of the stomach, but also as regards each of its functions. The type of stomach affected must produce some modification in the resulting processes produced by any disturbance, but this effect must not be overexaggerated, for all people, whatever the sex or shape of the stomach, are liable to the same affections, and any difference in the liability of any individual to any particular affection is due to the different make-up of the nervous system and the habits of the patient. The nervous tendency of the female is illustrated by comparing the two sexes as regards time of onset of symptoms. The female shows in every position of the pain a much greater tendency than the male to feel the pain quite early in the digestive process and also irregularly. For example in the upper sterno-umbilical position the 78 males show regular pain from ½ hour upwards in 54 cases but early and irregular pain in 24 only. The 83 females, on the other hand, show regular pain from ½ hour upwards in only 36 cases, but early and irregular pain in 47 cases. And so all the way through. The greater number of cases of late pain in each position in the male appears to indicate that more of the cardiac and œsophageal cases in this sex are secondary to the pylorus and less of primary condition than in the female.

It is quite common for the hyposthenic and asthenic types of stomach to be referred to as "dropped." An organ can only be said to be dropped if it has originally occupied a higher position than at present, but all these four types are normal to the individuals possessing them and are developmental. The only form of gastroptosis which exists is that associated with varying degrees of visceroptosis owing to relaxation of the abdominal wall, and if any disorder is present, whether it is purely nervous or one which delays the emptying of the stomach, such stomachs must suffer more severely than those unassociated with this condition.

ORGANIC LESIONS OF THE STOMACH.

The only two lesions which need be mentioned here are gastritis and uncomplicated ulcer. Gastritis is no doubt, common enough; it is present to some degree in all chronic ulcers. I shall refer to this condition later on, and at the moment merely say that, when it does produce symptoms, they are indistinguishable from those due to irritability of the body of the stomach, except by the type of vomiting and an examination of the stomach contents, and they are rare in comparison with the bulk of gastric cases. Ulcer, on the other hand, is a very common affection and of great importance from our present point of view, because we know its position and therefore where the irritable focus causing the symptoms is situated. Whichever side of the pylorus the ulcer is situate, its effect in causing irritation of the sphincter is the same, so that duodenal ulcer must be considered with gastric ulcer. A comparison of the pain of gastric and duodenal ulcer with that of the cases already examined shows that it is essentially the same in all particulars and due to the same causes. There are two series of cases; the first is one of 85 cases of duodenal ulcer, and the second of 59 cases of gastric ulcer. All were operated upon and shown to be free from complications. Of the 85 cases of *duodenal ulcer*, 70 showed isolated pain and 15 various combinations. The isolated areas of pain were as follows :—

Upper sterno-umbilical region ..	..	in	9 cases.
Middle ,, ,, ..	..	,,	22 ,,
Lower ,, ,, ..	..	,,	16 ,,
Right 9 costal cartilage region ..	..	,,	17 ,,
Right and left 9 c.c. region	..	,,	6 ,,

Combining these areas together so as to represent the different regions of the stomach, the following result is obtained :—

Cardiac pain	..	12·2	per cent. of cases.
Pyloric pain	..	87·1	,, ,,

It is, therefore, quite clear that duodenal ulcer causes pyloric pain in the majority of cases, but in a certain number the pain is cardiac. In exceptional cases a chronic duodenal ulcer causes no pain whatever in any position, the only effects being a sense of fullness and regurgitation of the gastric contents. Now this result agrees with our conception of pyloric irritability already formed—namely, that pyloric pain is the usual result, but sometimes backward effects without pain occur, the symptoms being attributable to the body and œsophagus only. The

difference from simple functional disorder is that a larger proportion of patients with duodenal ulcer suffer from pyloric pain, having the empty sensation of hunger, and a smaller proportion backward effects only. The explanation is that duodenal ulcer belongs chiefly to the group I have mentioned, in which the pain occurs later than usual and when the stomach is almost empty, hypersecretion is present, and pyloric spasm is more common. Of the 59 cases of *gastric ulcer*, 23 were described by the operating surgeon as being near the pylorus and 36 in the body of the stomach.

The 23 *pyloric cases* gave rise to localised pain in 18 and combined pain in 5 cases. In 18 cases the pain was distributed as follows:—

Upper sterno-umbilical area	in 2 cases.
Middle " "	" 6 "
Lower " "	" 8 "
Right 9 costal cartilage	" 1 case.
Left 9 c.c.	" 1 "

The regions of the stomach represented by these areas are as follows:—

Cardiac pain	in 11·1 per cent. of cases.
Pyloric pain	" 88·8 "

Pyloric ulcer, therefore, usually causes pain in the pyloric area, but sometimes, as in duodenal ulcer, a backward effect on the body of the stomach is the only symptom. The 36 ulcers in the *body of the stomach* caused pain in isolated areas in 20 and combined areas in 16. The pain in the 20 body ulcers was distributed as follows:—

Upper sterno-umbilical area	in 12 cases.
Middle " "	" 5 "
Lower " "	" 2 "
Left 9 c.c.	" 1 case.

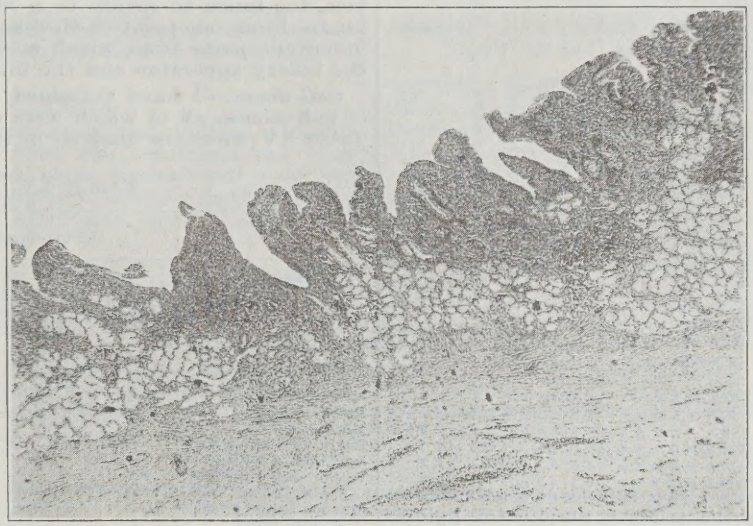
The percentages affecting the different regions of the stomach are as follows:—

Cardiac pain	in 60 per cent. of cases.
Pyloric pain	" 40 "

The majority of ulcers of the body of the stomach cause definite cardiac pain, but in a smaller number of cases pyloric pain. This fact has been commented upon before by various observers and there can be no doubt that an ulcer of the small curvature situated in the pyloric vestibule, although some distance from the sphincter, may give rise to irritability of this structure through the mysenteric plexus.

The number of these cases is small, but they are enough for our purpose. The patients with multiple areas of pain in all these cases showed similar combinations to those already described. These results appear to indicate that the pain is not produced by irritation by the gastric contents of any afferent nerve-fibres in the base of the ulcer, because if this were the case the position of the referred pain should always accurately indicate the position of the ulcer.

FIG. 2.



Scar of duodenal ulcer. The patient complained of gnawing pain one hour after food, relieved by eating.

The alternative explanation is that the pain indicates the particular segment of the stomach which the ulcer is chiefly irritating. A duodenal ulcer or a pyloric ulcer acts as a focus of irritation to the pylorus with secondary cardiac symptoms. The pain is nearly always of the pyloric type, but occasionally the body of the stomach is the source of pain. An ulcer in the body of the stomach acts as a focus of irritation to the cardiac portion of the stomach, but in a smaller proportion of cases irritates the pylorus owing to its position, so that the pain, though usually of the cardiac type, is often of the pyloric type. Not only is the pain of an ulcer of precisely the same nature as that of simple functional disturbance, but it obeys all the laws applying to it. There is no distinction between them and it is quite impossible to separate them clinically. The pain comes on during digestion and ceases when food is eaten or when the stomach is empty or after vomiting. The pyloric and duodenal cases show the pyloric type of pain—that is to say, pain occurring in the later stages of digestion—and the cardiac cases the cardiac type of pain which occurs earlier and often irregularly.

These ulcers show combinations of the pain areas of precisely the same nature as the functional cases, and the posterior pain corresponds to the pain in front. All the remaining characters described in relation to gastric pain—for example, the increasing irritability of the stomach with the lapse of time, the intervals of freedom from alternating with attacks of pain, the ready relief of pain by dieting, the dependence of pain upon the condition of the nervous system, and of the health of the patient, the relief of pain by alkalis and food are in agreement with the hypothesis that the pain of gastric ulcer depends entirely upon the fact that the ulcer acts as a focus of irritation to the neuro-muscular mechanism of the stomach. A further point of importance is that the ulcer is still unhealed in the intervals of freedom from pain and the attacks of pain are influenced by exciting causes similar to those existing in functional disturbance. It is quite impossible to foretell in any given case what is the condition of the ulcer. It may be healing, or even healed, and yet the same kind of pain may be present. It is not uncommon to find the ulcer advanced in healing in a fatal case of hæmatemesis, and sometimes ulcers excised by operation are shown by microscopic examination to be healed (Fig. 2). It is also a matter of common knowledge that the abdomen is frequently demonstrated to be free from any organic disease whatever at operations undertaken for the relief of gastric pain mistaken for that of ulcer. The following 33 cases of gastric pain, all of which were thought to be the subjects of gastric or duodenal ulcer, were explored quite thoroughly and no lesion whatever was demonstrable in the

duodenum, stomach, or the rest of the abdomen. They are as shown in Table XIV.

TABLE XIV.

Region.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper st.-umbilical	2	1	2	2	=7
Middle st.-umb. ..	1	2	2	3	=8
Lower st.-umb. ..	—	—	1	2	=3
Upper sternum ..	—	—	—	1	=1
Lower sternum ..	—	—	—	1	=1
Right 9 c.c.	—	—	4	—	=4
Right and left 9 c.c.	—	—	1	—	=1
Left costal m. whole	—	1	1	—	=2
Upper st.-umb. and right 9 c.c... ..	—	—	1	—	=1
Upper st.-umb. R. and L. 9 c.c. ..	—	—	—	1	=1
Upper st.-umb. and left 9 c.c.	—	—	1	—	=1
Upper st.-umb. and whole sternum ..	—	—	1	—	=1
Middle and lower st.-umb.	—	—	1	—	=1
Upper middle and lower st.-umb. ..	—	—	1	—	=1
Total	3	4	16	10	33

This series is not an average sample of the dyspeptic population, because the relative number of pyloric cases is too high, and of the œsophageal cases too low. Considering the isolated areas of pain only, the percentages are as follows:—

Œsophageal pain	8 per cent.
Cardiac pain	28 „
Pyloric „	64 „

Of the total dyspeptic cases the percentages are:—

Œsophageal pain	25·3 per cent.
Cardiac pain	33·4 „
Pyloric „	39·7 „

They, however, agree quite well with a series of ulcer cases in which pyloric pain is relatively high. The ulcer cases quoted above show the following percentages:—

Œsophageal pain	Nil.
Cardiac pain	27·7 per cent.
Pyloric „	71·9 „

The right type of case has, therefore, been selected for operation, except that no case showing isolated œsophageal symptoms should be subjected to operation without some other very definite evidence of ulcer. The treatment for an ulcer of the stomach is precisely the same as that for acute or chronic irritation of the stomach—that is to say, the adoption of the appropriate means to remove the gastric irritability produced by the ulcer—namely, rest for the stomach, reduction of its work, and reduction of its acidity. Finally, the curves of acidity obtained from cases of ulcer demonstrate what parts of the stomach are irritated. My own statistics show that some 78·9 per cent. of the curves obtained from cases of duodenal ulcer are of the pyloric type, and that about 90 per cent. of the curves of acidity of pyloric ulcers show similar curves. On the other hand, about 77·7 per cent. of the curves obtained from ulcers of the body of the stomach are normal in type and indicate that the pylorus is acting normally. Ryle [2] quotes a series of cases of duodenal ulcer showing hyperchlorhydria in 68 per cent., and of gastric ulcer showing normal curves in 75 per cent. of cases. Hunter [3] gives 88 per cent. hyperchlorhydria in duodenal ulcer and 67 per cent. in pyloric ulcer, and 35 per cent. in cardiac ulcer.

REFLEX EFFECTS ON THE STOMACH.

Irritability of the stomach may arise as a reflex effect from some other organ, more especially a part of the alimentary system. Craven Moore [4] calls this reflex dyspepsia. Our certain knowledge of this subject is fragmentary and it is difficult to decide what reliance should be placed upon the X ray appearances described. A great deal has been written from different points of view on the question as to how the stomach is affected by these reflexes; in fact, too much to review in a clinical study of this kind. From our point of view as clinicians the most important parts from which such reflexes arise are the biliary apparatus and the intestine.

Gall-stones.—I have examined a series of 56 cases of gall-stones, all of which were operated upon, and Table XV. gives the analysis of their pain.

TABLE XV.

Region.	Occurrence of pain.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper st.-umbilical	2	1	3	2	= 8
Middle st.-umb. ..	—	—	2	—	= 2
Lower st.-umb. ..	—	—	—	1	= 1
Upper sternum ..	1	—	—	2	= 3
Lower sternum ..	2	—	3	3	= 8
Right 9 c.c. ..	—	—	3	1	= 4
Right and left 9 c.c.	—	—	—	1	= 1
Left costal margin .	—	—	—	1	= 1
Upper and middle st.-umbilical ..	1	—	—	1	= 2
Middle and lower st.-umbilical ..	—	—	—	1	= 1
Sense of fullness and gaseous eructations	—	—	—	—	=25
Total	—	—	—	—	56

Almost half the cases complained of a simple feeling of fullness and eructation of gas, symptoms attributable to the body of the stomach, since only five of the patients had acid eructations.

Combining the localised pain areas the following percentages are obtained:—

Œsophageal pain	40·7 per cent.
Cardiac pain	29·6 „
Pyloric „	29·6 „

There is here an excess of cases affecting the body of the stomach and the œsophagus, which is very much greater if the cases of simple fullness are combined with them.

This, I believe, is in accordance with the general medical notion regarding the gastric symptoms associated with gall-stones. Many series of cases with examinations of the gastric acidity in gall-bladder conditions have been published. For example, a series published by Bonar [5] shows 23 per cent. of cases of hyperchlorhydria, and 78 per cent. of cases of either achlorhydria or normal curves. Another series quoted by Ryle [2] gives 21 per cent. hyperchlorhydria and 79 per cent. normal curves or hypochlorhydria. All these are in agreement with the view that in disease of the gall-bladder the body of the stomach is the part particularly affected, and in a smaller number the pylorus. The time of onset of the symptoms is the same as that in any average series of cases; so that in this reflex dyspepsia the type of symptoms entirely depends upon which part of the stomach is irritated. It cannot be expected that one part should always be exclusively affected, but that the incidence should fall more sharply on one part than another.

Intestine.—It is much more difficult to come to a definite conclusion as to the effects upon the stomach of reflex irritation from the intestine, and I have no conclusive series of cases to present at the moment. As regards appendicitis, I will merely say that I thoroughly agree with those observers, and Walton [6] in particular, who deny the existence of chronic appendicitis except as the end-result of an acute attack. In a series of 64 cases of appendectomy for gastric

ymptoms in whom the removal of the appendix roduced not the slightest effect—

Œsophageal pain occurred	..	in 15·5 per cent. of cases.
Cardiac pain occurred ..	..	„ 31·1 „
Pyloric „ „ ..	..	„ 53·3 „

This series is not unlike that in which an operation vas undertaken for supposed ulcer of the stomach.

SUMMARY.

1. From a consideration of the position, time of nset, and relief of pain, the conclusion has been eached that there are three fundamental symptom roups constituting dyspepsia, the pyloric, the cardiac, nd the œsophageal syndromes, each of which has everal different types.

2. There is clinical evidence that the pyloric isorder produces backward effects upon the body nd œsophagus, and the cardiac disorder upon the esophagus.

3. If the patient has neuropathic tendencies the ymptoms are modified in certain ways indicated. he body and œsophagus are more likely to e disturbed in such patients than the pyloric egion.

4. The chief clinical phenomena of these types f disorder are as follows:—

Pyloric Syndrome.—Pain appearing in the pyloric rea during the later stages of digestion. It is ccompanied by secondary cardiac symptoms, either n empty hungry feeling, or a sensation of fullness, r of pain. Vomiting occurs with pain in a certain umber of cases. Pyloric pain may be absent and econdary cardiac symptoms may alone be present. n all the types of cases acid eructations and secondary esophageal symptoms commonly occur. The symp-oms in all cases are relieved by food.

Cardiac Syndrome.—Pain, or fullness only, appearing n the cardiac area during the early stages of digestion, r moderately late, or irregularly. Vomiting occurs vith pain in a certain number of cases. Secondary sophageal symptoms are common, and the fluid ructated is more likely to be bitter or neutral than cid. The symptoms may, or may not, be relieved y food.

Œsophageal Syndrome.—This is either primary r secondary and consist of pain, or one of the minor ensations, in the œsophageal area. The upper and ower parts of the œsophagus differ, in that the ymptoms affecting the latter show, to a considerable xtent, similar time relations to food as the body of he stomach; whereas, in the case of the former he symptoms characteristically appear quite early r irregularly. The symptoms of the lower part may r may not be relieved by food, but the relief fforded to those of the upper part is usually only emporary or partial. Vomiting may occur from egurgitation of fluid, which is of the same nature s that of the cardiac syndrome.

5. Disorders of function as the result of local isease, not structurally altering the stomach, are of the ame nature as those of the idiopathic malady affecting he particular part of the stomach concerned.

6. Disorders of function primarily due to reflex ritability of the stomach are also the same as those f idiopathic origin, and they chiefly affect one or ther part of the stomach, but not exclusively so.

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OVARIAN HÆMORRHAGE SIMULATING ACUTE APPENDICITIS.

A SERIES OF SEVEN CASES.

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OVARIAN hæmorrhage from a ruptured Graafian follicle or corpus luteum is one of the many conditions which may be mistaken for acute appendicitis.

Occasionally reported in the early part of last century, it was then included in a group labelled apoplexy of the ovary. H. W. Wilson,[1] in 1905, seems to have been the first to note its diagnostic confusion with acute appendicitis. Novak,[2] of Johns Hopkins Hospital, who reviewed the literature up to 1917, was able to collect 40 recorded cases, and Brakeley and Farr [3] have published a summary of 14 which were treated at the New York Hospital between 1914 and 1925, all with a pre-operative diagnosis of acute appendicitis. A number of other observers have reported single cases in which, before operation, the condition was thought to be ruptured ectopic gestation.

Of the following series of seven cases, all but one of which came under my observation, six were admitted to the surgical wards of the London Hospital, and one to the Southend Victoria Hospital. The patients were all women between the ages of 19 and 25.

The Cases Described.

CASE 1.—A shoe operative, aged 19, and unmarried, was admitted to the London Hospital on March 21st, 1924. For a week she had had dull pain in the right side of the abdomen, but this had not prevented her from going to work until two days before admission, when it had become much more severe. She complained of nausea but had not vomited. Her bowels had been open daily, though not as freely as usual. She had had no disturbances of micturition and her periods were regular, the last finishing eight days previously. On *examination:* temperature 98·2° F., pulse-rate 96, respiration-rate 24. Tongue moist and furred. Cutaneous hyperæsthesia over the right iliac fossa and over right ligament of Poupart. Tenderness and slight resistance to pressure in the right iliac fossa, but no rigidity of the abdominal muscles. Per rectum, some fullness in the pouch of Douglas, with slight tenderness. No abnormal constituents in urine. At *operation* the appendix was freely movable and normal in appearance. The left ovary was also normal, but in the right ovary there was a swelling, about the size of a large walnut, which had ruptured into the peritoneal cavity. As the ovary was being delivered through the abdominal wound, a round object, the size of a walnut and looking like a mass of blood-clot, contained in a thin membrane, slipped out of the ruptured cysts followed by dark altered blood and fresh arterial hæmorrhage. The cavity of the cyst was obliterated by a running suture, 2 oz. of blood-clot were swabbed out of the pouch of Douglas, and after the appendix had been removed the abdominal wound was closed without drainage. The patient made an uninterrupted recovery and after discharge had no complaints, menstruation being normal. The *pathological report* was: "Hæmorrhagic corpus luteum; no histological abnormality of appendix."

CASE 2.—An unmarried shop assistant, aged 20, was admitted to the London Hospital on May 4th, 1924. She had had abdominal pain for six days, at first generalised, but for the last 48 hours mostly in the right side. She complained of nausea since the onset of the pain, and had vomited twice during the two days before admission. She had taken an aperient on the night previously, and whilst at stool on the morning of the day of admission had been seized with acute pain in the right iliac fossa, followed by vomiting. Her bowels had been open daily since the onset of pain and she had had no dysuria or frequency. Her menstrual periods had been regular, the last finishing 12 days before. On *examination:* distressed; temperature 98·4° F., pulse-rate 100, and respiration-rate 24. Considerable tenderness in right iliac fossa, lessening to the left of the mid-line. Slight rigidity of abdominal muscles of the right side and cutaneous hyperæsthesia above Poupart's ligament. Per rectum, no swelling or tenderness. Nothing abnormal in urine. *Expectant treatment* was adopted, with the patient in Fowler's position, nothing but water being given by the mouth. After 36 hours

her temperature had not risen, but her pulse-rate, after dropping at first to 88, had risen again to 102, and she was having a good deal of pain. *Operation* was therefore decided upon, and the appendix, which was found freely movable and normal in appearance, was removed. The right ovary was scarred and thickened and showed a hæmorrhagic cyst about the size of a large walnut, apparently on the point of rupture. The left ovary was normal. The cyst was opened, and its contents, blood-clot, removed. The cavity was obliterated and the abdomen closed. The patient made an uninterrupted recovery, and two months after discharge her periods were normal and she had no symptoms. The *pathological report* was: "Blood-clot and fragments of lutein tissue; no histological abnormality of appendix."

CASE 3.—An unmarried domestic servant, aged 20, was admitted to the London Hospital on May 13th, 1924. Two days previously she had been seized with acute colicky pain in the lower abdomen. She had had considerable nausea but had not vomited. Her bowels had been open twice since the onset of the pain; she had had no frequency or pain on micturition and denied any vaginal discharge. Her periods had been regular, the last finishing 21 days before. On *examination:* temperature 99° F., pulse-rate 108, and respiration-rate 26. Tongue furred. Abdomen slightly distended and tender to palpation over the whole hypogastrium, with rigidity of muscles on right side. Cutaneous hyperæsthesia absent. No sign of vaginal discharge. Per rectum, great tenderness and a soft mass high up on the right side. At *operation* a freely movable, apparently normal appendix was removed. The right ovary, which was low down in the pelvis, contained a ruptured hæmorrhagic cyst about the size of a walnut, and there was some blood-clot in the pouch of Douglas. The cyst was dealt with as in the last two cases, and the clot swabbed out of the pelvis. The patient made a good recovery and six weeks after discharge had no complaints. The *pathological report* was: "(1) Slight acute inflammation of peritoneum of appendix. (2) Blood-clot, red and grey thrombus, and layer of lutein cells from cyst of right ovary."

CASE 4.—The patient was a married woman, aged 25, who had had no children or miscarriages. On admission to the London Hospital on May 14th, 1924, she complained of having had sharp intermittent pains in the right side of the abdomen for four days, with nausea but no vomiting. A few hours previously it had increased in severity. Her bowels had been open daily and she had had no disturbance of micturition. Her periods had been regular and normal, the last finishing 11 days previously. She had had a mild attack of somewhat similar pain lasting for two or three days about five weeks before. On *examination:* temperature 99·6° F., pulse-rate 94, and respiration-rate 26. Tongue moist and furred. Some tenderness in right iliac fossa, but no rigidity and no cutaneous hyperæsthesia. Per rectum, slight but definite tenderness on right side. Nil abnormal in urine. At *operation* the appendix was freely movable and normal in appearance. The right ovary contained a hæmorrhagic cyst the size of a hen's egg, which had apparently just ruptured, with escape of dark altered blood. A mass of blood-clot was squeezed out and the cavity examined. There was no definite lining membrane and no fresh hæmorrhage. The cyst was obliterated with a running catgut suture, preserving the ovary. The left ovary was normal in appearance. The appendix was removed and recovery was uninterrupted. Four weeks after leaving hospital on May 31st she complained of a purulent vaginal discharge and also that her periods had not returned since the operation. She was given appropriate treatment for the discharge and advised to discontinue the use of contraceptive pessaries. A month later the discharge had almost gone and her periods had returned. She has since become pregnant. The *pathological report* was: "(1) Appendix—no histological abnormality. (2) Blood-clot and a minute fragment of lutein tissue."

CASE 5.—A shop assistant, aged 24, unmarried, was admitted to the London Hospital on June 1st, 1924. For three days she had been away from work, complaining of abdominal pains and nausea. On the morning of admission the pain had become more severe and localised to the right side, and she had vomited once. Her bowels had been open daily and she had had no disturbance of micturition. Her last menstrual period had begun on May 13th, and had been perfectly normal. On *examination:* in considerable distress; temperature 99·2° F., pulse-rate 112, and respiration-rate 24. Dirty furred tongue. Tenderness in right iliac fossa on palpation; no rigidity or cutaneous hyperæsthesia. Per rectum, tenderness on both sides of the pelvis; no mass felt. No vaginal discharge; urine free from abnormal constituents. At *operation* the appendix was movable and appeared normal, but the right ovary was the size of a golf ball, much thickened and scarred, and showed an unruptured cyst about half an inch in diameter projecting from the outer pole. This was incised and found to contain clear fluid and some blood-clot. The contents were evacuated and the cavity obliterated. The left ovary was normal, and the wound was closed after removal of the appendix. The patient had a slight rise of temperature on the second day after operation; otherwise she made an uninterrupted recovery and was discharged on the fifteenth day. She was seen again six weeks later, when she was free from symptoms. The *pathological report was:* "(1) Appendix: no histological abnormality. (2) Blood-clot and fragment of lutein tissue."

CASE 6.—The patient was a woman, aged 23, who had been married one year without pregnancy. She was admitted to the Southend Victoria Hospital under my care on Jan. 12th, 1928, complaining of six days' intermittent pain in the right side of the abdomen. It had been sharp and sudden in onset and had subsided gradually with exacerbations at intervals of a few hours—in no instance of greater severity than the first attack. The pain had been followed by nausea and she had vomited once. She also complained of two days' dysuria and frequency of micturition, and of dyspareunia. She had no appetite and was constipated. Her periods had always been regular, the last finishing 11 days before the onset of the pain. On *examination:* temperature 99° F., pulse-rate 88, and respiration-rate 26. Tongue moist and slightly furred. Abdomen tender with slight resistance to pressure in the lower right quadrant. No cutaneous hyperæsthesia. Per vaginam, tender mass above the right vaginal fornix, separate from the uterus, which was freely movable and did not seem to be enlarged. No vaginal discharge, and nothing abnormal in urine. As *expectant treatment* she was put to bed in Fowler's position and allowed nothing but water by the mouth. Some 18 hours later her pulse-rate had risen to 114, though her pain had somewhat subsided. The diagnosis of acute appendicitis was made and I decided to explore her abdomen without delay. At operation the appendix showed no abnormality. The right ovary contained a hæmorrhagic cyst the size of a large walnut, which had recently ruptured into the abdominal cavity; fresh arterial hæmorrhage—probably induced by the manipulation necessary to bring the ovary up to the abdominal wound—appeared at the point of rupture. The left ovary was normal. The right ovary and appendix were removed; about 2 oz. of recent blood-clot was swabbed out of the pelvis and the abdomen closed without drainage. This patient made an uninterrupted recovery and was sent home on the fourteenth day after operation. The *pathological report* was: "(1) Appendix: no histological abnormality. (2) The section shows a fibrous ovary with remains of hæmorrhage into a corpus luteum."

The last case of the series is of interest in that it was the only instance of this condition seen at the London Hospital in the year ending May 31st, 1925, whereas the first four cases all occurred within less than three months. I did not see this patient on admission, but I was present at the operation.

CASE 7.—The patient was an unmarried domestic servant, aged 22, and was admitted on April 6th, 1925. For ten days she had complained of abdominal pain, which had been constant, though not at first severe. Three days before admission its severity had increased, and she vomited five times during the night of April 4th—i.e., 36 to 24 hours before admission—and again once 12 hours previously. Nausea had been constant some time before the vomiting began. Her bowels had been open daily since the onset of the attack; two days before admission she had been given an enema. She had had no disturbance of micturition, and her periods had been regular, the last finishing one week before—i.e., three days after the onset of the abdominal pain. On *examination* she seemed in good health and was not distressed. Temperature, 99° F.; pulse-rate, 90; respiration-rate, 24. Tongue moist with patchy white fur. Localised tenderness in right iliac fossa with slight rigidity of abdominal wall in same situation. Cutaneous hyperæsthesia above and below Poupart's ligament on right side. No mass discoverable by palpation. Per rectum, she appeared very tender; this was discounted as being due to nervousness. Urine not examined. At *operation* the appendix seemed to be normal and was removed. The right ovary contained a cyst the size of a golf ball, which burst on delivery, its contents being apparently blood-clot. The right ovary was removed, the tube being left intact. The left ovary was normal. The patient made an uninterrupted recovery, and the *pathological report* was: "(1) Slight acute appendicitis. (2) Hæmorrhagic lutein cyst of right ovary."

Diagnosis before Operation.

In all these cases the symptoms and physical signs were strongly suggestive of acute appendicitis. In three of them the pain was certainly described as

being right-sided only, and not as being generalised or epigastric at its onset; but its severity, the suddenness of its onset, and the absence of symptoms referred to the urinary system, coupled with the physical signs, pointed strongly to the appendix as the seat of the condition. Two of the patients had no rise of temperature, and this is admittedly unusual in acute appendicitis; but here again the absence of a history of amenorrhœa or even the imminence of the next regular period, as well as the absence in each case of any suggestion of uterine hæmorrhage, rather discounted the suggestion of ectopic pregnancy. In one case, the sixth of the series, the possibility of right salpingitis was suggested, but the balance of evidence was distinctly against it.

The common features of these seven cases were pain of sudden onset, tenderness to pressure in the right iliac fossa, and a raised pulse-rate; these symptoms and signs must inevitably suggest acute appendicitis. In five of them the abdomen was opened and the appendix searched for at once; of the remainder, expectant treatment was tried in Case 2 for 36 hours and in Case 6 for 18 hours. In both of them a rising pulse-rate made it clear that further delay was inadvisable if the diagnosis was correct. It is reasonable to suppose that in Case 2, had a confident diagnosis of the true condition been possible before operation, the hæmorrhage and peritoneal irritation would have subsided with complete rest, as the cyst was found at operation to be unruptured with no free arterial hæmorrhage in its cavity. The pathological process had, in fact, stopped, and resolution was apparently taking place. However, as it has been pointed out, a diagnosis, or at any rate a confident diagnosis, of the true condition cannot be made; such symptoms and signs as these cases presented will always point strongly to that common condition, acute inflammation of the appendix.

Brakeley and Farr [3] consider that operative treatment is not indicated in ovarian hæmorrhage of this type, except in rare instances. They quote two cases in which a diagnosis of the condition was made without operation, and which cleared up completely with rest and medical treatment. (One patient had had her appendix removed previously.) They go on to say, however, that—

> "the differential diagnosis is extremely difficult. We found no pathognomonic sign or symptom of hæmorrhage into a Graafian follicle. In case of doubt, observation for a few hours is justifiable, but as there is grave danger from delay in appendicitis, and very little danger from an exploratory operation, it is wiser to operate if the symptoms do not subside."

Moore [4] is impressed with the fact that in none of the cases reported, so far as he could ascertain, was the correct diagnosis made before operation. He gives a summary of 14 cases, including two of his own; ten were diagnosed as acute appendicitis, and four as ruptured ectopic gestation. Eick's [5] and Odermatt's [6] cases were also diagnosed as acute appendicitis before operation.

Furthermore, though the condition might clear up with rest if caught at once in the early stages, four of those I have described had reached the stage of rupture and intraperitoneal hæmorrhage; and Crousse,[7] Goldberger,[8] and Strauss [9] have each reported cases in which the hæmorrhage approached the degree seen in ruptured ectopic pregnancies of the fulminating type, and the patients were only saved from death by immediate operation. Penny's [10] case proves that hæmorrhage of this type can indeed end fatally; his patient died in nine hours, and at necropsy the abdominal cavity was found to be full of blood from a ruptured Graafian follicle.

Thus it will be seen that the condition under review produces two clinical types of case; the first comprising the milder degrees, giving signs of peritoneal irritation and indistinguishable from acute appendicitis; the second, fulminating, presenting the picture of severe intraperitoneal hæmorrhage. Both call for operative treatment.

Course of the Hæmorrhage.

The pathological process underlying this form of ovarian hæmorrhage seems to be an exaggeration of the normal physiological mechanism of rupture of the Graafian follicle, which occurs some time during each menstrual cycle in a sexually active woman. It is believed that a minute hæmorrhage normally takes place into the cavity of the follicle immediately after discharge of the ovum, and that the tiny clot is absorbed by the cells of the membrana granulosa during the process of development into the lutein cells of the ripening corpus luteum. It is suggested that in the cases under discussion this hæmorrhage for some reason assumes pathological proportions, distending the tunica albuginea of the ovary, thereby producing the pain and physical signs, and finally rupturing the hæmatoma so formed at or about the stigma of the original Graafian follicle. This view is borne out by the uniformity of the pathological findings in the seven cases under review; blood-clot and lutein cells were in every case found in the material removed from the ovary.

Shaw [11] believes that ovulation—i.e., extrusion of the ovum—takes place between the thirteenth and sixteenth days of the menstrual cycle. If the above view of the pathology of these cases is correct, then the onset of the symptoms might be expected to bear some similar constant relation to the first day of the preceding period. Unfortunately, exact notes on this point were not taken in my series of cases. Except in one of them, the symptoms seem to have started somewhere about midway between the periods.

What, then, is the factor which causes the hæmorrhage into the cavity of the follicle to become excessive? Schumann [12] believes that it is generally disease of the ovarian vessels. Primrose [13] reported two cases in which trauma played a part; in one of them a normal Graafian follicle ruptured during a sudden strain while lifting a heavy box, whilst the other was attributed to violent vomiting. Novak [2] quotes von Beust as having found nine cases out of 36 in which trauma was regarded as having started the hæmorrhage. In Crousse's [7] case rupture occurred during a bimanual examination, but possibly the cyst was already hæmorrhagic. H. W. Wilson [1] pointed out that these cases occur essentially in young women whose ovaries are at the height of their functional activity and who are often in a state of relatively high sexual excitement. In my series of cases nothing suggests a common ætiological factor. There is certainly no history of trauma in any of them.

Cases at the London Hospital.

An examination of the records of the London Hospital shows that during the nine years, 1915–23, nine cases of hæmorrhagic lutein cyst of the ovary were admitted to the *surgical* wards. All of them were explored at operation, and in each the right ovary was involved. From the fact that these patients were admitted on the surgical side it is reasonable to suppose that the pre-operative diagnosis was always acute appendicitis, the truth being learnt only after exploration of the abdomen.

It is remarkable that before 1924 not more than two cases occurred in any one year, while in that year five cases occurred within less than three months. The average for the period 1915–24 works out at 1·4 cases admitted on the surgical side per year. The corresponding figure for acute appendicitis during the same period is 582 per year.

During the same decennium ten cases of hæmorrhagic lutein cyst were admitted to the *gynæcological* wards of the London Hospital, the diagnosis being established by laparotomy. In eight of them the left ovary was involved, in two the right. This suggests that the two ovaries are equally affected, and indicates that when the condition occurs on the left side the question of acute appendicitis does not arise.

I am indebted to Sir Hugh Rigby, to Mr. A. J. Walton, and to Mr. Hugh Lett for permission to

publish six of these cases; and also to Prof. H. M. Turnbull, Director of the Pathological Institute of the London Hospital, for permission to make use of the findings of his department.

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A REPORT ON TWO CASES OF TYPHUS OF AN ANOMALOUS TYPE.

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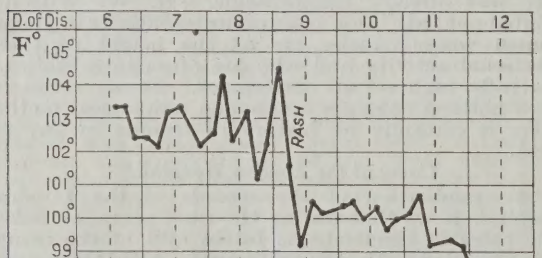
WE are reporting the two cases detailed below, as an account of this illness seems to be urgently called for in the interests of public health, and in view of the fact that an account such as this may help others should they meet equally puzzling cases.

The man's illness was the first to come under notice, and after a rash appeared it was thought necessary to bring all possible laboratory tests to bear. As these came back one after the other in favour of typhus, it became necessary to notify the disease. Even so, the case presented a startling isolation and an absence of any known ætiology, but

FIG. 1.



Temperature chart in Case 1 from April 30th to May 12th.

Dr. D. L. Thomas, the medical officer of health, has, we understand, discovered some history of dealing in, and storing of, second-hand clothes. This, however, appears to have ceased two years ago. The man's wife was subsequently brought into hospital with an illness presenting the same clinical features as the husband's except that there was no rash, but two tests having come back in favour of typhus, it became necessary to notify her and send her away to the M.A.B. Hospital.

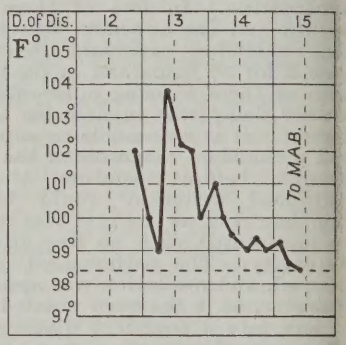
CASE 1.—A. G., aged 48, tailor's machinist, admitted to hospital April 30th, 1928, with a diagnosis of influenza.

History.—Ill five days, with pains all over, but especially complaining of headache and sleeplessness. Worse the last two days, when he was forced to go to bed. In previous good health and no infectious disease at home.

Condition on Admission.—Moderately well nourished. Temp. 103·4° F.; pulse 120. No respiratory distress; tongue coated brown and dry. Pharynx: injected and glazed appearance. Skin: no visible eruption. Lymph glands: no enlargement. Central nervous system: pupils equal and react L and A; no external ocular palsies; cranial nerves normal; all reflexes +; generalised hyperæsthesia; slight rigidity of limbs, but no paralysis. Mental condition: mild delirium; resistive to attention.

Subsequent History.—On the following day the delirium was the most prominent sign, the patient becoming almost maniacal, necessitating his transfer to an observation ward. There was impaired note base of left lung. This state was maintained till May 3rd (ninth day of disease), when the temperature fell to 99·2°. The delirium gave way to a state of profound apathy, the patient lying quite inert, talking being a great effort; it was necessary to catheterise him. He complained of intense frontal headache. At this stage (ninth day) a faint petechial eruption was noticed, confined to the trunk and proximal parts of the limbs, the individual lesions being about one-sixteenth of an inch in diameter. The eruption had faded by May 13th, having never involved the face, forearms, or legs. The pyrexia subsided by May 6th, the twelfth day of disease (see Fig. 1). But there was no improvement till the 15th, when the patient commenced to take an interest in his surroundings, asking for food, and helping himself. His frontal headache did not abate, and on the 21st he complained of seeing double. He had diplopia for distant objects only. There was slight bilateral ptosis and weakness of both external recti. Since then the headache and diplopia have gradually subsided. He is up in the afternoons, his general condition is much improved, the only physical signs present being a monotonous voice and slight immobility of the face.

FIG. 2.



Temperature chart in Case 2 from May 30th to June 2nd, when the patient was removed to a hospital of the Metropolitan Asylums Board.

Urine: Urates, + +; otherwise no abnormal constituents. Ehrlich's diazo-reaction −ve. May 15th: Widal, −ve 1/10, 1/25, 1/50, and 1/100; −ve paratyphoid. Weil-Felix, +ve up to 1/1000 dilution. May 9th: Blood, Hb., 88 per cent.; red blood cells, 4,700,000; white blood cells, 13,000. Differential: Neutrophils, 89 per cent.; lymphocytes, 11 per cent.; hyalines, eosinophiles, basophiles, nil. May 10th: Cerebro-spinal fluid, under pressure + +; clear. Reaction, faintly alkaline. Albumin, 0·06 per cent. Globulin, + +. Fehling, normal reduction. Lymphocytes, slight excess. W.R., +ve (strong).

CASE 2.—K. G., aged 51, wife of A. G., admitted May 30th, 1928.

History.—Confined to bed five days, but not feeling well for seven days before that, complaining of intense headache, especially at the back of the head, and stiffness of the neck, and feeling very hot. Also complained of a recurrence of a cough while she was ill, and that it hurt her to cough.

The *condition on admission* was almost identical with that of the husband. Temp., 103·6° F., very restless and delirious; tongue dry, brown, and cracked. Spitting up very tenacious sputum. There was no rash, and it was decided to await the result of the Wassermann and Weil-Felix tests before notifying this case. However, these both came back positive, and the case was transferred to the M.A.B. on June 2nd. The temperature had then fallen to normal by lysis (see Fig. 2), but the delirium persisted.

The diagnosis of these two cases presented very considerable difficulties, and we should like to acknowledge the help we received from the consulting staff of this hospital, from the medical officer of health, and from the Ministry of Health. The disease which was most likely to cause confusion was encephalitis lethargica, with the pyrexia, headache, and diplopia; but the combination of a delirium, with a subsequent state of complete apathy, coupled with a petechial eruption, positive Wassermann and Weil-Felix reactions, forced on us a diagnosis of typhus. On the other hand, a temperature falling by lysis, absence of rash in the woman, and absence of body vermin in both cases, are rather strong points against this disease.

Clinical and Laboratory Notes.

A FURTHER NOTE ON THE RECORDED INCREASE OF CANCER.

By D. F. Shearer, M.B. Oxf., F.R.C.S. Eng.

It was suggested in an annotation on the Apparent Increase of Cancer in The Lancet of Jan. 28th last that, for purposes of comparison, "a better idea of the general trend of the death-rate" of cancer would be given by taking a group of five years instead of a single year. Acting on that suggestion, the figures for the sites given for the years 1901–05 in the Annual Report for 1925 were standardised on the basis of the population of 1925 and divided into two groups. The one (A) containing the sites: intestines, larynx, lung, pancreas, kidney, bladder, and prostate, was selected as representing those sites in which the greatest increase in diagnostic facilities had occurred during the period; and the other group (B) contained the remainder. Two special groups were also worked out, the buccal group in the male and the sex organs in the female. In the group 1901–05, to the sites mouth, tongue, jaw, and lip was added the site "lymphatic glands of the neck," as practically in all cases cancer of these glands is secondary to one of the primary sites in the buccal cavity group. It is not included in 1925, as it is not stated separately in the list of sites given in that year. This is probably of no importance, as the number of deaths attributed to that site had fallen 70 per cent. by 1912; and more accurate information as to site than was provided by the original certificate was obtained by the Registrar-General in 1925 in over 1000 cases. Presumably, then, all deaths certified as due to cancer of the lymphatic glands of the neck in 1925 were corrected to give the primary site. The figures were worked out for the 10-year age-groups given in the 1925 report, and collected into two groups "35–65 years" and "over 65 years" to save space.

Table showing the standardised figures and rates of increase or decrease in deaths from cancer in the various groupings in 1901–05 and in 1925, and in deaths from "old age" for males, females, and persons.

Males.

Sites.	35–65 years.			Over 65 years.		
	1901–05.	1925.	% inc. or dec.	1901–05.	1925.	% inc. or dec.
All	10,082	12,241	+ 21	7,213	11,155	+ 54
(A)	1,642	3,698	+125	1,298	3,542	+172
(B)	8,440	8,543	+ 1	5,915	7,613	+ 28
Buccal ..	1,625	1,442	− 10	1,023	1,184	+ 15
"Old age"	..	..	..	19,320	10,063	− 48
Females.						
All	15,981	14,953	− 4	9,924	12,372	+ 24
(A)	1,830	2,281	+ 25	1,532	2,801	+ 82
(B)	4,151	12,672	− 10	8,392	9,571	+ 14
Sex organs	7,390	7,007	− 5	3,056	3,528	+ 12
"Old age"	..	..	..	28,708	14,980	− 48
Persons.						
All	26,063	27,194	+ 4	17,137	23,527	+ 37
(A)	3,472	5,979	+ 72	2,830	6,343	+121
(B)	22,591	21,415	− 5	14,307	17,184	+ 20
"Old age"	..	..	..	48,028	25,043	− 48

inc. = increase; dec. = decrease.

The figures show that both in males and females, up to the age of 65, the whole of the increase is attributable to the small group (A); that over that age there is a second factor at work which affects both (A) and (B); and that after allowing for an increase in group (A) over the age of 65 at a similar rate to that obtaining below 65, there is an increase in the males of 2320, and in the females of 2065, against reductions in the deaths assigned to "old age" of 9257 and 13,728 respectively. These figures correspond to some extent with the proportions which deaths from cancer at this age-group bears to deaths from all causes. It is not to be expected that the correspondence would be exact, but it is sufficiently close to be extremely suggestive of a near relationship between increasing cancer and decreasing "old age" deaths. It is curious to note that the two groups, buccal in the male and sex organs in the female, which are undeniably "accessible" and have not been subjected to any increase of diagnostic facilities, show no increase whatever. The figures of the former are 2648 and 2626, and of the latter 10,446 and 10,535.

There is, however, another factor in the apparent increase of cancer to which, as far as I know, attention has not been directed, and it may conveniently be stated in the form of a logical syllogism.

Death from some cause is inevitable.
Death from causes other than cancer is not inevitable and can be prevented, and the rate is diminishing.
Therefore death from cancer is inevitable and its rate must be increasing.

It is quite obvious that if the chance of subsequent death from cancer at any given age is a, and of subsequent death from all other causes is b, then, since $a+b$ must equal unity. a must increase as b diminishes. But this does not mean that the chance of death from cancer at any given age is increasing; there is sound reason to believe that cancer is not a pathological entity, but a physiological process with a more or less fixed rate for each age; it merely means that the individual has a greater chance than formerly of surviving to an age where the death-rate from cancer is higher. It is impossible at present to estimate how far this factor is operating in the recorded increase of cancer in later years, but there can be no doubt whatever that its effect will be seen in the future.

It may seem pessimistic to assert that the fruition of all our efforts for the preservation of health and the prevention and cure of disease and accident can only lead to universal death by cancer, but it must be remembered that in the earlier years of life cancer can be eradicated and that in the very old it frequently, if not invariably, assumes an almost benignant type which quite clearly often in the past has been, and not seldom in the present is, mistaken for senile decay.

A CASE OF PERICARDIAL KNOCK ASSOCIATED WITH SPONTANEOUS PNEUMOTHORAX.

By W. A. Lister, M.B. Camb., M.R.C.P. Lond.,
ASSISTANT PHYSICIAN TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.

The term "pericardial knock" was applied during the war to a sharp, rapping sound which was sometimes to be heard over the præcordium in cases of gunshot wounds of the chest, and was often sufficiently loud to be audible at a distance from the patient.

The first to draw attention to the phenomenon were Rees and Hughes,[1] who quoted nine cases from their experience. Shortly afterwards Maynard Smith [2] described its occurrence in some of his cases on the Western front, and Henley Munden [3] recorded a case in a boy who was shot in the chest while rabbiting. Hull [4] mentions it in his book on war surgery, and there is also a brief account of the condition in Norris and Landis's text-book on diseases of the chest.

Though the sound varies in intensity in different cases, and persists for a variable period after the original injury, all the cases recorded present certain

[1] Rees, W. A., and Hughes, G. S.: The Lancet, 1918, i., 55.
[2] Smith, S. Maynard: Brit. Med. Jour., 1918, i., 78.
[3] Munden, W. P. H.: Brit. Med. Jour., 1918, i., 175.
[4] Hull, A. J.: Surgery in War, 2nd edit., p. 386.

features in common. In character the sound is a sharp, hollow knock; it is always systolic in time and usually varies with respiration, being loudest during inspiration, though the case described by Henley Munden did not show this variation. Finally, it is always associated with a wound of the left side of the chest. A number of suggestions have been put forward to account for the sound. Rees and Hughes thought it possibly might be caused by vibrations imparted by the cardiac impulses to a column of air enclosed in a bronchus by a missile or blood-clot. Maynard Smith suggested that it was due to air which had found its way into the interstitial tissues of the lung or mediastinum. In civilian practice the condition appears to be somewhat of a rarity, and it has not been possible to find any record of its occurrence apart from gunshot wounds of the chest. The following case therefore seems worth recording:—

History.

A commercial traveller, aged 31, was first seen on Feb. 1st, 1928. He complained of slight pain in the region of the second left intercostal space and of a loud tapping sound in his chest. He stated that six days previously, while sitting in a tramcar he had experienced a sudden, sharp pain in the left upper part of his chest and had felt faint and breathless for a moment. He got out of the tram, and after obtaining a little brandy from a friend who lived near by, he returned home and went to bed as the pain persisted, though he felt quite well in other respects. For the next two days he remained in bed and the pain rapidly passed off except for a slight tenderness. On the third day he decided to get up, but on putting his feet to the ground he was horrified to hear a loud rapping sound in his chest which was also plainly audible to his relatives. Accordingly, he returned to bed and the sound ceased when he lay down. Next day he made another attempt, and though the sound returned as before as soon as he stood up, it caused him no inconvenience and he remained up and about and was able to walk round for the consultation two days later without experiencing any ill-effects whatever.

Previously he had been healthy, though he recognised that he was a nervous man. At no time had he suffered from pleurisy or cough, nor so far as he knew had he lost weight. There was no history of tuberculosis in the family.

Physical Signs.

On examination the patient was thin, pale, and nervous, with a spasmodic tic of the right side of the face. Pulse 116 per minute, regular. Temperature normal. As he sat giving the history of his illness at a distance of some 5 feet a hollow knocking sound could easily be heard coming from the patient's chest. Its point of maximum intensity was found to be situated over the fourth left costal cartilage, and a sharp tap corresponding to the sound was felt on palpation over the sternum. In character the sound was very similar to that heard over the brachial artery when taking a blood pressure at the point when the diastolic pressure is approached, but was, of course, very much louder. It was mid-systolic in time, coming at the end of the first sound and separated from the second sound by a short but distinct interval. It varied both with posture and with respiration. In the prone position it disappeared entirely; on sitting up it became clearly audible towards the end of expiration, but grew fainter and finally ceased as the lungs expanded. When the patient stood up the sound was at its loudest, rising to a maximum at the end of expiration and diminishing with inspiration. A deep inspiration could stop it entirely, even in the upright position, but ordinary quiet breathing did not do so. In other respects the heart sounds were perfectly normal, and the blood pressure was 145 systolic and 90 diastolic.

There was slight tenderness on pressure over the second left interspace in the midclavicular line, and the left side of the chest presented the usual signs of a pneumothorax with slight displacement of the heart to the right, so that the right margin of cardiac dullness was ¼ inch to the right of the right sternal border, and the apex only 3 inches from the mid-line. The coin sound could not be elicited, no succussion splash was heard, nor was a metallic quality added to the pericardial knock which was audible all over the chest.

A radiographic examination on the fluorescent screen showed the lung to be separated from the chest wall by 1 inch in the lateral plane, and there was also air surrounding the apex and base and lying between the upper half of the lung and mediastinum as far down as the reflexion of the pleura at the hilum. The whole lung, therefore, in a partially collapsed condition hung loose in the thorax suspended from the hilum. It was kept in constant flicking movement by the beating of the heart so that its free lower margin continually agitated the surface of a small quantity of fluid that lay in the costo-phrenic angle. Owing to this constant movement it was not possible to obtain a sharply defined radiogram of the outline of the lung.

During the course of the next fortnight the knock became fainter and less frequent, finally to disappear three weeks after the onset of the pneumothorax. At the end of this period I again examined him and aspirated half a pint of slightly turbid, straw-coloured fluid from the left base. It contained numerous leucocytes and gave the rather unusual differential count of: eosinophils, 95 per cent.; lymphocytes, 2 per cent.; endothelial cells, 2 per cent.; neutrophils, 1 per cent. No tubercle bacilli or hooklets were found and the culture was sterile.

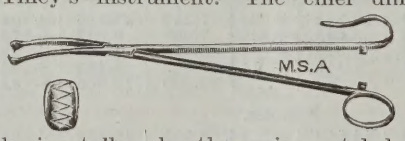
Six weeks after the onset of the illness there were no abnormal physical signs in the chest except for slightly diminished movement at the left base. A radiogram taken at this time showed a slight excess of fibrosis with a few scattered small foci of calcification spreading out from both hila, particularly the left. No signs remained of the pneumothorax or effusion. Treatment throughout was based on the assumption that the underlying cause was a ruptured tuberculous focus, and the patient improved in general health and gained weight during the time he was under observation.

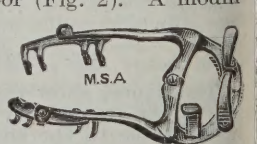
Since there was no trauma in this case it is unlikely either that air was present in the interstitial tissues of the lung or mediastinum or that it was locked off in an occluded bronchus. Bearing in mind the character of the sound, the fact that it was precisely systolic in time, and that its point of maximum intensity was directly over the root of the left lung, it would appear possible that it is analagous to the sounds heard when estimating the blood pressure by auscultation and that it arises in the left pulmonary artery. Partial obstruction of this artery at the hilum by tension or distortion caused by displacement of the lung appears not unlikely, and, as the position of the lung would vary with the posture of the patient and with the respiration this would also account for the variations in the sound observed in this case. But if this is the right explanation of the production of the sound it is curious that it is not more often observed.

New Inventions.

MODIFIED FORCEPS AND RETRACTOR.

I SHOULD like to call attention to two instruments which have recently been modified by me, and which have been appreciated by several leading surgeons: (1) Tonsil Vulsellum Forceps (Fig. 1), adapted from Tilley's instrument. The chief difference is, that while the jaws have a similar curve they grasp the tonsil longitudinally instead of horizontally, also the spring catch has been replaced by the ordinary "cross over" shanks, which are fitted with a ratchet at the handles, by means of which a good grip is retained throughout the operation. The instrument has been considerably lengthened, being 9½ in. as against the 8 in. of Tilley's. The bows of the forceps are so made that a snare can easily be applied. (2) Mastoid Retractor (Fig. 2). A modification of Wagener's, giving a wide field, the shanks being bent to allow of this. The base of the instrument is curved so as to lie well back out of the field of operation. It is opened and closed by a ratchet action, which is easier and quicker in use than the ordinary screw.





These instruments are sold by the Medical Supply Association, Gray's Inn-road, W.C.

G. W. MOREY, M.B. Adel.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a meeting of this Section held on June 6th, Mr. WARREN LOW, the President, took the chair, and a paper on

HARE-LIP

was read by Dr. VICTOR VEAU (Paris). He demonstrated a large series of lantern slides, setting out the principles upon which his operations for the deformity were done. He had been interested in the condition, he said, for 30 years, during which time he had performed more than 1000 operations for it, and also had minutely studied over a hundred cases which had been operated upon by others. He had made many mistakes, and when he did not secure the results aimed at he did his best to ascertain what was the reason. The causes of the malformation he did not expect to find.

Clinically hare-lip could be subdivided into four forms. The first was unilateral simple hare-lip, which constituted about 30 per cent. of the cases. The second, and most common, form was unilateral total hare-lip, accounting for about 40 per cent. of the total cases. The third and rarest form was bilateral simple hare-lip, these forming only about 5 per cent. Lastly, there was the bilateral total hare-lip, which were about 25 per cent. In unilateral simple hare-lip there were all the elements for reconstitution to form a quite normal lip on the inside edge of the cleft, but the muscles were lacking, and this was the deficiency that caused most of the trouble. After having tried a variety of incisions and forms of operation, he had come to the conclusion that the most important step was suture of the muscles, for it was this that imparted to the lip the thickness and protrusion which were so necessary for a good cosmetic result. Then the operator could direct his attention to the exact adaptation of the cutaneo-mucous lining. He used a very fine, straight needle threaded with silk, and to be sure of securing direct coaptation he used magnifying glasses in the form of spectacles. The suture was finished on the cutaneous side and on the mucous side. His object in making a flap was to secure that protrusion of the lips; every effort was made to constitute what was popularly termed "Cupid's bow."

Dr. Veau's photographs showed that a month after operation the line of incision was still plainly evident, but six months afterwards, in many of the examples, neither scar nor line could be detected, the reason being, he said, that he did not put the stitches needlessly deep. A scar resulted when mucous membrane was included in the suture. This was the mistake most commonly made by surgeons who did not exercise sufficient care in the operation for hare-lip. In some of the cases after operation an island of mucous membrane was to be seen in the skin; it always remained bright red, never became transformed into skin, and to a woman was a disfigurement. Another error was to leave an irregular muco-cutaneous line. Great care must be taken over the suture of the muscles, to give that protrusion and correct line which would make the lips approximate to the normal. Many of the errors made were capable of being remedied by further operation if parents, and the patients themselves, would permit it.

In unilateral total hare-lip of severe degree, with a very wide cleft, the lip could not be reconstituted by operation. In older children the first step which was often necessary was for the dentist to straighten the incisor teeth. In one variety of unilateral total hare-lip there was no cleft palate; these, he considered, constituted about 12 per cent. of all cases, and they were very difficult to treat. In dealing with unilateral total hare-lip his object was to avoid two bad results. One was retraction of the upper lip the other was flattening of the nostril. When the lower lip was more prominent than the upper, the result was unsightly. For operations on hare-lip the surgeon should have a mentality different from that required for hysterectomy or amputation of a limb, because of the minuteness and delicacy of the manipulations of tissue required. He turned up a mucous flap from the septum; it was easily separated; this flap was very tough and did not break. It was separated as far as the anterior part of the tubercle. The difficulty was in the ridge. He cut the frænum of the upper lip, and completely separated the palatine mucous membrane, preserving the posterior palatine artery. He first reconstituted the floor of the nose, as it was then easier to reconstitute the palate afterwards. The horizontal flap must be the threshold of the nostril.

Difficulties of Operation.

Mr. C. H. FAGGE said he was unable to bring forward anything like such a wealth of material as Dr. Veau had done; his purpose was, rather, to set forth a few of the difficulties of operation in these cases as they had presented themselves to him. Hare-lip, he considered, could be divided into three degrees: (1) partial; (2) unilateral; (3) bilateral. It was part of his thesis that in every case the tissues might be defective. Some surgeons thought the tissues were fully developed and were simply separated. Even when the first degree of hare-lip was present there was, in his experience, an abnormality of the ala, which must be dealt with. He had always found that in those cases incision had to be carried up into the nose, so as to bring the ala inwards.

The first difficulty was to scale out the ala. This could be done by undercutting the cheek on the affected side. Provided the tissues of the cheek were separated from the maxilla far enough upwards, even to the outer canthus of the eye, the ala could be brought into its natural position. If that was done the naso-labial fold would be restored. The next difficulty was the formation of a normal nostril. In his experience, this demanded that something should be cut away, usually from the inner side of the cleft, so as to convert what was an abnormally wide nostril into one of ordinary size. On the other hand, it was possible to cut too much away and leave the child with too narrow a nostril instead of a very wide one. A very wide nostril caused difficulties in speech, because too much air came through it; if it was associated with a defect in the palate, it made the pronunciation of certain letters very difficult. In one case, which he described, the defective speech due to the nostril being very wide had necessitated a second operation, involving an extensive dissection of the cheek.

He had not found that restoration of the lip was, in itself, very hard; but there was one difficulty connected with the ala which he was at present unable to overcome—namely, its eversion. Even when brought into the normal position, the ala, in these children, was inclined to be everted, whereas the normal ala was inverted. He would like to know how other members of the Section had dealt with this difficulty. He had only been able to excise a portion of the cartilage on the outer side of the nose so as to turn it inwards, but had not had any great success. Another difficulty was that due to depression of the apex of the nostril; it was very difficult to bring it into a normal position. For some time he had given up cutting through the muco-cutaneous surface. He carried the incision three-quarters of the way through the lip, then turned back the cut flap and sutured it behind the tissues of the lip itself, so as to preserve a wide mucous surface behind, which would prevent adhesion of the lip to the alveolus. On the larger fragment there was always an area of mucous membrane carried upwards in the line of what should be the tubercle, and this must be carefully removed. In reconstituting the lower margin of the lip the chief difficulty was the formation of a good tubercle. The lip should have

no adhesion to the alveolus; it must be quite free, so that it would come forwards with each movement of the remainder of the face.

The complete and the bilateral cases presented no difficulties apart from those he had spoken of. Beyond the plastic portion of the operation, he had confined himself to the continuous suture through the deep structures, including the muscles on both sides, using a cutaneous suture of fine gut, and in most of his cases this lip operation had been done at the same time as that on the cleft palate—when the latter condition was present—usually at the age of about three months.

The Need for Secondary Operations.

Mr. T. POMFRET KILNER gave a description of the work of Mr. Harold Gillies and himself in this region of plastic surgery, largely in doing secondary operations in cases in which the first had not been satisfactory. He put forward a plea for simple primary reconstruction. However small the parts, each element of the lip had its separate and distinct layers, and these, especially the muscular layers, must be correctly approximated if proper balance of function was to result. In all plastic work the amount of raw surface must be reduced to a minimum, as raw surface meant scar tissue and subsequent contraction. He considered that no surgeon was justified in promising a perfect cosmetic result in these cases as a result of only one operation; his chief aim should be to give establishment of function, and for this reason all zig-zag procedures and flaps were to be condemned. One ought to concentrate on the nostril. Mr. Gillies and he never tried to equalise the sides of a cleft by elongating the shorter of the two elements; the longer of the two sides required shortening in order to give a good cosmetic result. In the operation no skin and very little mucous membrane was sacrificed. In unilateral cleft cases Mr. Gillies frequently turned over a much smaller flap of muco-periosteum from the stump of the alveolar process on the longer side. Mr. Kilner expressed his admiration of the work of Ritchie, of Minnesota, in this kind of surgery. Ritchie got very accurate muscle approximation, and made use of electrical stimulation to ascertain the upper and lower limits of each muscle concerned. In the practice of his colleague and himself, the stitches were removed in from three to five days, and they preferred to have a slight gaping of the wound. Great improvement of contour was found to result from the use of the epithelial inlay. In most of the cases which came for a second operation for readjustment of the lip the skin triangle had been incorporated too low down. In some patients a reduction of nose was called for, and some noses could only be dealt with adequately by fracturing and resetting certain bones. Dealing with the nasal septum often resulted in the solution of difficulties which had resisted all other measures.

SECTION OF OPHTHALMOLOGY.

AT a meeting of this Section held on June 8th Mr. ERNEST CLARKE, the President, took the chair, and a paper entitled

THE ANTIBACTERIAL BODY LYSOZYME

was read by Mr. FREDERICK RIDLEY.

Lysozyme, described by A. Fleming in 1922, was, he said, an enzyme which could destroy most of the organisms which were pathogenic for man and the lower animals. It was very widely distributed in nature, being found in all animal tissues and tissue fluids and in most of the secretions. In tears, polymorphonuclear leucocytes, nasal mucus, and the sputum of man it was present in very high concentration, therefore it was difficult to over-estimate its importance in protecting the individual against bacterial invasion. It was destroyed by temperatures above 75° C., it acted most rapidly at 60° C., and was very efficient at the temperature of the body. The enzyme was destroyed by free acid or alkali. It disappeared on intravenous or subcutaneous injection into an animal. Wolff regarded the fixation by fats as the probable natural means of storage of the enzyme in the body. It was present in turnips, white of egg, fowl, and fish. In man it was present in greatest concentration in leucocytes and cartilage, in tears, nasal mucus, and sputum. Mr. Ridley showed on the screen many plates to prove the strong bactericidal power of lysozyme. Fleming and Allinson had first showed that the blood serum contained lysozyme, and that in polymorphonuclear leucocytes it was present in very high concentration. The lysozyme content in tears was tested in more than 100 cases. In 16 cases of conjunctivitis, acute and chronic, the infected eye was found to have a reduction of lysozyme to about 30 to 60 per cent., the unaffected eye having a normal titre.

As to the general causes of lysozyme reduction, Finlay observed that in growing rats which were deprived of vitamin A kerato-malacia developed, and this was associated with a fall of lysozyme in the tears. He further made the valuable observation that the introduction of a drop of human tears into the conjunctival sac from time to time postponed that condition. In six cases of phlyctenular disease, and four of recent interstitial keratitis, the lysozyme titre of both eyes was less than 55 per cent. of the normal, even though only one eye was affected, probably because of the associated general ill-health. This perhaps accounted for both eyes being attacked. The reduction of lysozyme in the normal eye in keratitis was seen in several cases having positive signs of congenital syphilis, and was not observed in this case which showed no signs of congenital syphilis. Thus it was conceivable that the interstitial keratitis was due to a local infection other than by the spirochæte. Epiphora was associated with a fall in the lysozyme titre in every case observed, and when the epiphora ceased the lysozyme titre rose at once and there was clinical improvement in the condition of the eye. It was evident that the lacrymal gland must be partially paralysed by the instillation of atropine into the conjunctival sac.

Mr. Ridley said that a teaspoonful of the pure enzymic substance would confer its characteristic power over *Micrococcus lysodeicticus* upon 100 million gallons of normal saline. No antiseptic which had been tested compared with lysozyme in its power to inhibit the growth of this organism. As lysozyme was tolerated by the tissues, without appreciable reaction in concentrations as great as 40 times that in tears, the possibilities of its application for superficial and generalised infection were obvious. But the preparation of the enzyme in a pure state presented many difficulties, and demanded a laboratory equipped specially for the purpose.

Dr. ALEXANDER FLEMING commented on the fact that the substance was found in the parts of the body where it was wanted: in the nose, in the sputum, and the parts exposed to microbes in the air. He supported Mr. Ridley's contentions, and said that his observations on the clinical conditions observed carried the subject a distinct step forward. Wolff, in Holland, had isolated the substance from egg-white, and this opened up a means of obtaining it in a very concentrated form.

Mr. LESLIE PATON said this research started from an attempt to determine the action of herpetic viruses, and it was a matter of congratulation that Mr. Ridley had been induced to carry on this important work. He (Mr. Paton) had suggested some years ago that the absence of this substance might be one of the causes of neuropathic keratitis developing in some cases. He thought that after the Gasserian ganglion had been destroyed, or the nervous supply to the lacrymal gland had been ablated, the tears might not show the same concentration of this—as it then was—newly discovered substance. He hoped Mr. Ridley would also be able to inquire into the question of neuropathic keratitis and the herpetic viruses.

Colonel A. E. LISTER spoke of the irritant action of mercuric chloride as a preventive of dirty eyes in

connexion with cataract operations. It caused lacrymation, and he asked whether an effect of this was to reduce the lysozyme in the tears.

The PRESIDENT spoke highly of the value of this far-reaching paper; it had a direct practical application to many diseases, and he hoped the research would be continued.

Mr. RIDLEY, in reply, said it was impossible to get tears in any considerable amount from the eye in a condition in which the trigeminal nerve was damaged, but such secretion as did then exist in the eye contained some lysozyme. Dr. Fleming's researches on the direct action of antiseptics on lysozyme showed mercuric chloride to be very damaging. The increase of epiphora where epiphora was already present must be to the considerable detriment of the patient.

Reports of Cases.

Mr. NORMAN FLEMING showed a patient with a congenital anomaly simulating retinitis proliferans. A band of fibrous tissue stretched from the disc in the lower part of the fundus and seemed to be adherent to the fundus. There had been no injury at birth nor since.

Mr. J. D. M. CARDELL showed a case of arborescent cataract; and Mr. HUMPHREY NEAME one of iridocyclitis in a man aged 41. In the right eye was a deep striation, and in the left fine keratitis punctata.

Mr. MONTAGUE HINE related a case in which an artificial eye which had accidentally burst in situ was removed only with considerable difficulty. He said that spontaneous fracture of the cheaper kinds of glass eye was not uncommon, as they were not properly annealed in a warm sand bath after being blown, but it must be rare for the contact of the eye with the socket to be so close that some of the orbital tissue was drawn into the eye and strangulated, as in the present instance. This woman felt something explode in her face, but was unable to remove the artificial eye, and had increasing pain. The house surgeon at the ophthalmic hospital could not remove the eye either, and Mr. Hine was asked to see her. He gave her an anæsthetic and passed a bent probe up the back of the eye from below. This pushed aside the tissue which was blocking the hole at the back and let in the air, and the eye was released at once. The absent piece of glass was inside the eye, emphasising the fact that there was a negative pressure originally in all blown eyes. Mr. Hine also reported a case of neurofibromatosis, and showed histological slides from it. The eye was useless as an organ of vision, and both lid and eyeball were removed. The pathological report by Mr. Hervey Wyatt was read.

Mr. F. A. JULER reported a case of his own of the same nature, and Mr. TREACHER COLLINS described the findings in the cases of the kind he had examined.

Reviews and Notices of Books.

DEVELOPMENT OF THE HUMAN EYE.

By IDA C. MANN, M.B., B.S. Lond., F.R.C.S. Eng., Assistant Surgeon, Royal London Ophthalmic (Moorfields) Hospital. With a Foreword by Sir JOHN HERBERT PARSONS. London: Cambridge University Press. Published for the *British Journal of Ophthalmology*. 1928. Pp. 306. 36*s*.

"Miss Mann has been peculiarly fortunate in having access to what is probably the most comprehensive series of human embryos available in this country."

So says Sir John Parsons in a foreword to this work. She has used this material placed at her disposal by Prof. J. Ernest Frazer to the utmost advantage, and the result is a monograph which depicts the processes which constitute the development of the human eye with a wealth of detail and illustration which has never before been attempted. The fact that the directors of the *British Journal of Ophthalmology* have come forward to undertake its publication is in itself a high testimonial to the scientific importance of the work and to the value of the beautiful plates drawn by the author which enrich its pages.

The first two chapters are devoted to development from the first appearance of the embryonic plate until birth. The part played by surface ectoderm, neural ectoderm, and associated mesoderm are distinguished. Incidentally congenital malformations, microphthalmia, congenitally cystic eyeball, and coloboma of the retina are explained. The next chapter deals with the lens and certain congenital abnormalities in this organ which are shown to have relation to developmental defects. No defect can be congenital if it is situated outside the "fœtal nucleus." On the other hand, certain defects may arise in postnatal life and yet be developmental, since the lens continues to develop throughout life. In the next chapter, on the "Neural Ectoderm," the development of the different layers of the retina is described with a great wealth of illustration and detail. The problem of the origin of the vitreous is a very obscure one, on which the last word has not yet been said. A distinction is drawn between the 'primary vitreous" derived from both lens-plate and optic vesicle and occupying the region of Cloquet's canal, and secondary or adult vitreous derived, in part at any rate, from the mesoderm, which enters the optic vesicle through the fœtal fissure. It is impossible to say of any given vitreous fibril how much of it is mesodermal and how much ectodermal. The suspensory ligament of the lens is derived from fibres which arise during the latter part of fœtal life and which have been called the tertiary vitreous. Under the heading of "Associated Mesoderm" are described the development and arrangement of the larger blood-vessels in the orbit which supply or drain the optic cup; also the development of the choroid, the development and retrogression of the fœtal intra-ocular blood system—i.e., the hyaloid artery, the tunica vasculosa lentis and their connexions—and the differentiation of the vessels of the iris and ciliary body; and, lastly, the development of the retinal arteries and veins. The ciliary muscle and region of the corneo-scleral junction (sections of which show well the "scleral spur" first described by Prof. Arthur Thomson) are illustrated by several drawings and diagrams. A full account is given of the development and subsequent atrophy of the pupillary membrane. The vessels atrophy as far back as the first anastomotic arcade where the arteries and veins are continuous; this so-called "circulus arteriosus iridis minor" is more correctly termed "circulus vasculosus iridis minor." It is of some interest to learn that in the sclerotic condensation that produces the sclera there is a lagging behind of the process in the posterior region. The author is too cautious to make anything more than a mere suggestion, but the inference cannot be avoided that this fact may have something to do with progressive myopia, for presumably, in certain stocks, the process of condensation is liable to be arrested too soon. The latter part of the book deals with the extrinsic ocular muscles, the lids and lacrymal apparatus, and the position of the eyes. In the final chapter the structure of the retina is compared to that of the cerebral cortex; up to the fourth month of development the analogy is close. Finally, Miss Mann supplies a synoptic comparison of optic with general development, and the volume ends with a large bibliography.

It is possible that the appeal of this work at present may be limited, but it will certainly be international Apart from its value to embryologists and biologists, which is undoubted, it should prove also of use to those practising ophthalmologists in all countries who are interested in the scientific side of their specialty.

Those eager to apply to clinical problems the results of developmental studies will find in it a fruitful source of inspiration, and will be grateful for the originality and vigour with which Miss Mann has attacked the subject which she has made her own.

RECENT ADVANCES IN TROPICAL MEDICINE.

By Sir LEONARD ROGERS, C.I.E., M.D., B.S. Lond., F.R.C.P., F.R.C.S., F.R.S. London: J. and A. Churchill. 1928. With 12 illustrations. Pp. 398. 12*s.* 6*d.*

IN tropical medicine, detailed work, no doubt of varying degree of accuracy, comprehensiveness, and interest, is reported almost weekly, and in ever-increasing volume. Of recent years new journals devoted to tropical diseases and new medical journals in the tropics have appeared; and abstracts of work in every field of medicine from every part of the tropics are published periodically in the *Tropical Diseases Bulletin*. Sir Leonard Rogers declares this publication a boon to the great majority of medical men in the tropics, far away from libraries, and acknowledges his own indebtedness to its abstracts for much of the information here summarised. He supplies an interesting and detailed précis of much recent work on some 23 tropical diseases. In some of them his own contributions have advanced knowledge, to the relief of human suffering and the added power of man over his tropical environment. His selective judgment of what is recent and what is advance will therefore receive wide attention. Yet readable and helpful as is much of this book, it fails in some sections. For example, ankylostomiasis, a minor disease of the white man, ranks hardly below malaria as a major disease of the races native to the tropics. Some of the recent work on this subject is not correctly reported or interpreted. Though this book is dated 1928, there are no references in this section later than 1926; references to Clayton Lane's important researches on diagnosis do not go beyond 1923; and it is disappointing to find that the author does not condemn the stupid dictum that mild infestations with hookworm are of no importance, and that "healthy" carriers may be disregarded! For the rest, treatment in the selected group of diseases is adequately dealt with; the historical sections are very interesting, there are 12 illustrations, and a good index.

NERVE TRACTS OF THE BRAIN AND CORD.

Anatomy; Physiology; Applied Neurology. By WILLIAM KEILLER, F.R.C.S. Edin., Professor of Anatomy and Applied Anatomy, University of Texas. New York: Macmillan Company; London: Macmillan and Co. Pp. 456. £1 15*s.*

A FREQUENT criticism of the medical curriculum of to-day is to the effect that no regular courses of "applied" anatomy or physiology exist; that these subjects are taught without much hint of their further application and are to a considerable extent forgotten by the time the student commences clinical medicine or surgery. Prof. Keiller makes a brave attempt to minimise this defect by writing three books in one for the student of neurology, who is led on by easy gradations from pure neuroanatomy through neurophysiology to clinical neurology. Whether his effort conduces to readiness of absorption by the student of this rather rich and in any case somewhat indigestible pabulum may be open to question. The anatomical part consists largely of a description of the structures seen on cross-section at various levels through the cord and brain-stem, so that, while projection-systems are fully detailed, association-systems in comparison are rather ignored. This is to some extent compensated for in the sections on neurophysiology, afferent and efferent systems being discussed and the special senses examined. The largest division is concerned with applied neurology, and this includes sufficiently accurate accounts of the semiology of lesions involving the anatomophysiological mechanisms described in the other parts of the book. The long supplement devoted to the classification of nervous diseases on an anatomical basis tends to descend to the level of a mere catalogue, so much so that some of its paragraphs really convey little information worthy of the name. Thus: "Familial periodic paralysis, of the flaccid type, occurs in youth after severe nervous strain. It disappears spontaneously, but tends to recur." Other statements unfortunately require emendation—e.g., that a "chronic" form of progressive lenticular degeneration occurs "without cirrhosis of the liver." Yet taken as a whole there is much for the student to learn which is offered him here in clear-cut fashion and with a justifiable dogmatism on his teacher's part. The diagrammatic illustrations, mainly collected at the close, are mostly too sketchy; others are so crowded with anatomical data as to become confusing. Few, if any, of the clinical drawings and photographs seem to be original.

THE NORMAL CELLULAR STRUCTURE OF THE CEREBRAL CORTEX.

L'architecture cellulaire normale de l'écorce cérébrale. By Dr. CONSTANTIN V. ECONOMO, Professor of Psychiatry and Neurology in the University of Vienna. French edition by Dr. LUDO VAN BOGAERT, Agrégé at the Université Libre of Brussels. Paris: Masson et Cie. 1927. Pp. 183. Fr.80.

THIS beautifully printed atlas of the cerebral cortex on its cellular side is a derivative of the much larger volume entitled "Die Cytoarchitectonik der Grosshirnrinde (1925) of the same author, with the collaboration of Dr. Koskinas. Recent though the latter is, the book under review is not a mere abridgement, but contains some 46 new photographic reproductions of cortical fields, as well as fresh considerations derived from further anatomical study. In point of fact, it is really more desirable for the neurologist and neurological student than its predecessor; it furnishes them with a basis of exact information from which they may proceed to further research. Here is to be found a lucid description of structural variations in different parts of the cortex, of differences in thickness, cellular composition and arrangement, of comparisons between one hemisphere and the other, of modifications attributable to age, race, degree of intellectual attainment, of defects found in a number of different pathological conditions (e.g., the congenitally blind, deaf-mutes, oligophrenics). Apart from the microphotographs, a number of diagrams illustrate with clearness and precision the groundwork on which such pathological investigations are based.

For the specialist the volume is indispensable; to him its appeal is direct and immediate.

DIETS FOR INFANTS AND CHILDREN.

Clinical Pediatrics. Edited by Prof. R. S. HAYNES, M.D. Vol. XII. *Infant and Child Feeding.* By H. B. WILCOX, M.D. London and New York: Appleton and Co. 1928. Pp. 202. 16*s.*

THIS unit of Prof. Haynes's admirable system of pædiatrics is likely to be one of the most useful and popular of the series, being devoted to a subject of such universal importance. The author's aim has been to present a clear account of the essentials of the physiology of nutrition, and to explain their bearing upon the problems of infant feeding. His object has been achieved with a considerable degree of success, and the book can claim to provide the student and practitioner with a system of infant feeding which, while based on physiological principles, is by no means as complicated as many of its kind. As a general rule, simple dilutions of fresh cow's milk with added carbohydrate are recommended in the feeding of normal infants when breast feeding is

not practicable. Special measures for the treatment of premature infants and of alimentary disorders are shortly described. The section on breast feeding forms a valuable feature of the book. The author stresses the importance of observing and recording the weight of the mother as well as of the infant, and discusses the deductions which may be drawn from the relation between the two weight-charts.

In one respect the title of the book is somewhat misleading; the diet of the child past infancy is hardly considered.

Die Ernährung Gesunder und Kranker Kinder. Second edition. By E. NOBEL, C. PIRQUET, and R. WAGNER. Vienna: Julius Springer. 1928. Pp. 160. RM.12.0.

THIS work, in which the Pirquet system of nutrition is applied to the practical feeding of healthy and sick children, has undergone some revision and amplification. In the first chapters the essentials of the theory are briefly set out and the nomenclature explained. As is now well known, the theory is based upon the hypothesis that the nutritional requirements of an individual stand in relation to the square of the sitting height (the "Siqua") rather than to the weight. The unit of nutritional value used is the "Nem" (Nährungs-Einheit-Milch), or amount of energy generated *in the body* by 1 g. of human milk. The requirements of the individual are reckoned in terms of a unit which represents one-tenth of the product of these two figures. The accounts here given of infant feeding and of the treatment of nutritional disorders are based on this method of calculation. Little importance is attached to the balance of carbohydrate and fat, provided that the latter is present in sufficient quantity to provide the necessary fat-soluble vitamins. The book has its limitations for the English reader, since Prof. Pirquet's system has made little headway in this country, and is unlikely to become the basis of practical dietetics. In fact, although it can probably claim the highest place from the standpoint of mathematical exactitude, the advantages of adopting so complicated a system are doubtful. However, the volume contains much that will interest those who make a study of nutrition and dietetics, especially the accounts of the treatment of various nutritional disorders.

EUGENICS.

La question eugénique dans les divers pays. By Dr. MARIE THÉRÈSE NISOT. Vol. I. Brussels: Librairie Falk Fils. 1927. Pp. 513.

IN this book Dr. Nisot has presented to those interested in eugenics and the problems allied to it a detailed and scholarly account of the social processes which in recent years have directed attention to this subject. In Great Britain, France, and the United States, which are dealt with in this volume, these processes have much in common. The rapid multiplication of socially useless types, the ravages caused among the best elements of the community by the war, and the relatively great fall in birth-rate of the better-endowed classes, are phenomena common to these three countries. Particular to England is the problem arising from her apparent numerical over-population, and to France and the United States the problem of regulating immigration. Dr. Nisot also discusses the remedies which have found favour in these countries. These remedies are variously calculated to increase the fertility of the socially valuable classes and diminish that of the dependent, hereditarily diseased, defective and delinquent classes, to regulate the process of immigration so that the quality of the national stock will not be impaired, and to promote interest in the eugenic aspects of marriage. Finally, the author reviews in considerable detail those legal enactments of Great Britain, France, and of the different States of the U.S.A. which bear upon eugenics, and describes the aims and scope of the eugenic institutions and publications of these countries.

The book is brought up to date to the end of 1926, and should prove very valuable to medical men anxious to gain a bird's-eye view of eugenics as a world movement and as a factor in the future of human welfare.

THE RATE OF LIVING.

By RAYMOND PEARL, Ph.D., Johns Hopkins University. London: University of London Press, Ltd. 1928. Pp. 185. 10*s.* 6*d.*

ACCURATE knowledge of the biology of groups, as distinct from the biology of individual organisms, has until recently been almost wholly lacking for any animal except man. A group of living things considered as a group has attributes and qualities peculiar to itself, and on the description and measurement of these attributes rests the foundation of the science of group biology. Prof. Raymond Pearl has devoted much attention to this new science, and in his latest book he reviews some of the main results of the experimentsl study of group mortality in the fruit fly, *Drosophila melanogaster*. In a clear introductory account of the laboratory technique employed in the collection of data, he emphasises his conviction that the lack of precise repetitive uniformity, which is commonly believed to be inherent in biological as contrasted with inorganic phenomena, is due in no small part to "general sloppiness and lack of specific, pertinent backgrounds of general knowledge in the conducting of biological experiments." Months, or even years, of careful observation of the habits of the subjects of experiment may be required before really significant experiments can be carried out.

Life tables are presented for the normal wild type fly, and these, when relative ages are compared, are very similar to those for human beings. But the life curves for the vestigial mutant of *Drosophila* are quite different. These differences are found not to be exclusively determined by environmental influences, although one particular environmental factor, density of population, is capable of converting the life curve of the normal wild type fly into that characteristic of vestigial flies at optimal densities. Further lines of inquiry were planned to probe deeper into the subject of life duration. An organism by virtue of its organisation is held to possess *inherent vitality*, which is manifested by the performance of certain vital actions in the absence of exogenous sources of matter and energy. With this conception further experiments with the following results were carried out. Wild type flies were reared under conditions of complete starvation and their life curves calculated. These (on a relative age base) are identical in form with those found for the same fly when fully fed. Thus the *form* of the life curve is the same whether the duration of life of the individuals comprising the group is an expression of total or only of inherent vitality. Under conditions of complete starvation differences in population density were found to have no effect on duration of life or on the form of the curve, which means that the profound effect of overcrowding in normally fed flies is not the result of any alteration in the inherent vitality of such flies, but merely curtails the bringing to expression of the potentialities of the inherent vitality. Since growth is a further expression of inherent vitality, supplementary proof can be sought and is afforded from investigations of this variable. Differences in the duration of life of flies and of growth rates in canteloup seedlings, under conditions such that these vital actions are the expression solely of inherent vitality, turn out to be the same in form. It would therefore seem to be demonstrated that the form of the distribution of differences of inherent vitality among different individuals is substantially the same in such widely different organisms as an insect and a plant. If rate of growth and duration of life be measured for the same organism under conditions such that only inherent vitality is expressed, a substantial negative correlation is found between these two variables. This and other evidence

supports the general conclusion that the duration of life varies inversely as the rate of energy expenditure during life. In other words, the length of life depends inversely on the rate of living.

The methods of analysis are essentially statistical, but the book is admirably written and should prove of great interest to the biologist.

JOURNALS.

ENDOKRINOLOGIE.—*Zentralblatt für das Gebiet der Inneren Sekretion und Konstitutionsforschung.* Edited by Prof. LEON ASHER and Prof. ARTHUR BIEDL. Leipzig: J. A. Barth. 1928.—This is a new monthly journal the publication of which is justified on the ground that up to the present there has been no scientific German journal dealing specifically with endocrinology. The morphological, experimental, and clinical aspects of endocrine investigation will be within its scope. The first issue consists of 80 pages, of which approximately half are devoted to five original articles and the remainder to abstracts of recent literature. The abstracts are about 150 in number and are in many cases of greater length than is usual. The five original articles in the first issues are by well-known authorities, and the journal should serve as a readily accessible source of German work on endocrinology. The first issue dated January, 1928, contains articles on Leydig Cells in the Human Testis by Prof. Alfred Kohn; Ovulation during Pregnancy brought about by Anterior Lobe Pituitary Hormones by Prof. B. Zondek and Prof. S. Aschheim; Infantile Myxœdema by Prof. F. de Quervain; the Function of the Intrarenal Tissue of the Torpedo by Prof. B. Kisch; on the Action of the Male Sex Hormone Obtained from Plants by Prof. S. Loewe.

The paper by Prof. Zondek is of exceptional interest. He brings forward evidence to show that ovulation can be made to occur in the pregnant mouse by means of implantation of the anterior lobe of the pituitary gland. After the implantation the follicles ripen, burst, and ova reach the tubes. The state of the ova varies; some show a well-developed nucleus, others a nucleus broken up into chromatin threads. In the majority, however, it is pigmented and degenerated. The ovary itself in this experiment shows in addition to the corpora lutea graviditatis young corpora lutea from the follicles produced under the new stimulus. These phenomena occur side by side with living fœtuses in the uterus. The amount of anterior pituitary implanted varied from 50 to 100 mg.

The third issue of the journal (March, 1928) contains original articles on the Hyperfunction of the Liver in Graves's Disease by Prof. N. Pende of Genoa, and on the Ovarian Hormone and Blood Calcium by Drs. M. Reiss and K. Marx. Prof. Pende discusses the connexion between the functions of the thyroid and the liver. It has been found by various observers that the livers of thyroidectomised animals show certain changes—namely, cloudy swelling, fatty infiltration and atrophy, and diminution in glycogen content. There is also an increase in blood cholesterol, diminution of, urea and an increase of amino-acids. It is known, moreover, that in hypothyroidism the blood-sugar curve is low, indicating diminished glycogenolysis. It has therefore been concluded that hypothyroidism is accompanied by hypohepatism. Prof. Pende attempts to show that the analogy can be extended further so as to correlate hyperhepatism with hyperthyroidism. The investigations which he has made include observations of the blood-sugar curve and other liver functions in patients with Graves's Disease. The results are interpreted as showing that in each of the liver functions tested the patient with Graves's disease shows an exaggeration of the normal picture. The findings are suggestive, but it remains doubtful whether the existence of a condition of hyperhepatism has been proved. Dr. Reiss and Dr. Marx discusses the relationship between the ovarian hormone and the blood calcium. Using rabbits and Biedl's preparation of ovarian extract they were able to show that the blood calcium could be lowered as a result of daily injections from a control value of between 14·1 and 15·3 mg. per cent. to 11·3 mg. per cent. The experiment seems to have been well controlled and the conclusions justified.

ROSS INSTITUTE AND HOSPITAL FOR TROPICAL DISEASES.

THE annual report for 1927 reaches us as we go to press. The resignations from the Council of Sir George Maxwell, and of Colonel Walter G. King, are recorded with regret. During the year, at the invitation of the Spanish Government, a visit was paid to Madrid by Sir Aldo Castellani, who gave lectures on malaria before the Royal Academy of Medicine and other societies. At the Seventh Congress of the Far Eastern Association of Tropical Medicine, held in Calcutta in December, 1927, the Institute was represented by Sir Malcolm Watson, who proposed two resolutions, which were seconded by Lieut.-Colonel S. R. Christophers, and passed by the Malaria Section of the Congress. In the first resolution it was suggested that plans for railways, canals, harbours, and all similar engineering works likely to affect the conditions producing malaria should be submitted to the proper public health authorities before being sanctioned by governments. The second resolution emphasised the fact that while there is no single method of malaria control applicable to all conditions and all countries, in large towns or works the control of the breeding places of the malaria-carrying species of mosquito is a method which should be employed whatever other anti-malarial measures are put into force. For wide rural areas, especially those with scanty, poverty-stricken populations, the first step in the control of malaria is adequate research, since suitable methods of prevention may vary in different districts. The need not only of thoroughly trained malarial research officers but of expert malarial engineers in any type of malarial prevention was stressed by the Congress. Sir Malcolm Watson, after many years active malaria control work in the Malay States, has now joined the Institute as Principal of Malaria Prophylaxis and Control Department.

There was a very large demand from India and the Colonies for the report on malaria control in Malay and Assam by Sir Ronald Ross, following his tour of inspection in 1926–27.

Anti-malaria Propaganda Work.—In order to obtain a general idea of the manner in which malaria was being dealt with in different parts of the Empire, the organising secretary, Major H. Lockwood Stevens, made a tour of India, the Federated Malay States, and Ceylon, and also visited Burma. His tour will be the subject of a special report.

Research Work.—Dr. P. Menon has carried out experiments on the poisonous effects of Paris green on the aquatic stage of mosquitoes other than anopheles. Work on fungi and fungal diseases has been continued. Several new species of mycetes and bacteria have been described. A satisfactory treatment for epidermophytosis of the toes (so-called mango toe) has been found. Experiments have also been carried out on the longevity of certain microbes. Dr. J. A. Shaw-Mackenzie has continued his work on the blood and tissue changes in cancer with reference to diagnosis and treatment. Independent confirmation of some of his conclusions has been obtained by Prof. W. C. Lewis and Mr. R. F. Corran working at Liverpool, and by Prof. D. Gardner, of Paris. Mr. J. Jackson Clarke has been engaged in further experimental study of diseases in which both specific alien cell-inclusions are present, and filter-passing stages of parasites have been found.

A list of scientific publications, addresses, and reports by members of the staff of the Institute, visiting medical men working at the Institute, and a statement of accounts concludes the report.

THE LANCET.

LONDON: SATURDAY, JUNE 16, 1928.

MEDICAL STATISTICS.

THE status of that branch of research concerned with statistics as applied to biological problems is now very different from what it was 30 years ago when Prof. KARL PEARSON was publishing the earlier memoirs of the series of fundamental researches which have so profoundly modified the aims and methods of statistical investigation. It is not claimed that any contribution to the science or art of clinical or preventive medicine of first-rate importance during the last 30 years has been the direct result of purely statistical investigation. But there can be no doubt that PEARSON and his school have raised the standard of medical discussion in the English-speaking world, so that many, even amongst those who believe themselves to be hostile to the teaching of the biometricians, have cause to be grateful to them for lessons in logic not wholly wasted. Two results have followed. Collective investigation, the team-work which—for other reasons than those we are discussing—has grown into fashion, is much more efficiently carried out than in the past; therapeutic claims of doubtful validity are, in spite of the immense opportunities for the exploitation of credulity which the developments of popular journalism and commercial advertisement provide, more sceptically received and, on the whole, less commonly accepted at full value than a generation ago. No doubt the cynic—particularly if he has read Prof. E. C. DODDS's illuminating article in THE LANCET of June 2nd—will retort that many medical men do still display in the employment of, say, "endocrine" therapy a too ingenuous faith in the general impressions which GALTON stigmatised as no more than superstitions. We admit that there is need to raise the standard of logical appraisement in clinical medicine still more. But the insistence of the biometricians upon statistical standards, their demands for numbers and percentages, have already done good and will do more good yet.

Wholly apart from the question as to what may be achieved by the application of the more recondite of modern statistical methods, such work as that of Dr. JANET LANE-CLAYPON [1] in establishing arithmetical standards by which the mass results of various surgical procedures may be appraised, has been of the greatest practical value. That work, which has always been submitted, before publication, to the criticism of experienced clinicians, illustrates the importance of the coöperation for which Dr. PERCY STOCKS pleads in the article and letter which we publish in our present issue (pp. 1242 and 1250). Medical practitioners can, and should, use many statistical methods for themselves, but statistical technique, like that of any other branch of science, has been so greatly extended that specialisation is inevitable, and many statistical problems—like that of cancer, to which Dr. STOCKS refers—cannot be solved without coöperation. The future of medical statistics is full of promise, and we trust that Dr. STOCKS's appeal will not be unheeded. The claims made by him on behalf of the statistical method as an instrument of medical research are not exaggerated; probably any of the few medical-statistical enthusiasts who were writing a generation ago would have claimed more; but this modesty of statement does not result from weakness or disappointment, but is both a sign and a cause of strength.

There is one aspect of the subject which demands comment. There is a general belief in our profession that statistical research, or even the perusal of the results of such research, is a hopeless undertaking for any but those who have an aptitude for, or at least considerable knowledge of, mathematics. It is foolish to cry peace where there is no peace, and we shall not deny, first, that a considerable proportion of the papers dealing with medical statistical problems are, and must be, written in a language which the ordinary medical reader cannot understand; secondly, that probably no living medical man in this country has a sufficient mathematical equipment to enable him to make any sensible contribution to the development of statistical theory which owes almost all its refinements to the labours of consummate mathematicians, the Bernoullis, the Laplaces, the Pearsons, and the Tschouprows of different ages and nations. But that statistical research work of the greatest importance has been, *and will continue to be*, effected with a technique and described in a language which any educated man can understand, was demonstrated by FARR a generation ago, and Dr. T. H. C. STEVENSON in our own time continues to give proofs of the propositions. We do not think the high price, or the traditional reputation for dullness, of blue-books is a sufficient excuse for the prevailing professional ignorance of the important researches published in the Annual Reviews and occasional Supplements of the General Register Office. If more of our readers would study these reports, they would realise how interesting and how clinically suggestive are many results which can be reached by the sagacious application of very simple statistical methods, and Dr. STOCKS—to whose undertaking we heartily wish success—would find no difficulty in obtaining the coöperation he seeks.

[1] See THE LANCET, 1926, i., 618; 1926, ii., 671.

PROFESSIONAL PROTECTION.

THE need for the practitioner to insure himself against the risks of expensive professional litigation is now more urgent than ever. Membership of one of the defence societies provides protection at the cost of an almost negligible premium (which a doctor is allowed to deduct from income for income-tax purposes); it should be regarded as an indispensable step on the part of everyone who enters the medical profession. It is not only that there is the risk in exceptional cases of vindictive verdicts with heavy damages. There is also an increasing readiness to formulate against members of the medical and dental professions complaints and criticisms to which reply must be made whatever the expense. This tendency is partly due to the general spread of education in health matters, partly to the national health insurance system which provides machinery for ventilating real or imaginary grievances against the panel practitioner without serious cost or responsibility on the part of his critics. A cheap and widely read daily press seems to give special prominence to any proceedings in which a doctor is defendant, and it is undoubtedly true that, when publicity has been given to a particular case, the incident is sure

to be followed by a crop of similar claims arising all over the country. It is thus the more desirable that every action against a practitioner in his professional capacity should be defended with the utmost vigour and the best available skill. Valuable time and money can often be saved by settling claims before they are brought into court. In this kind of work experience is all-important; the legal adviser who, for all other purposes can be relied upon, will rarely be able in this particular field to give the expert assistance which is at the disposal of the solicitors to the defence societies who are dealing with such matters every day. Complaints of careless diagnosis or negligent treatment, libel and slander actions, allegations of wrongful certification under the Lunacy Act—these and other dangers are regular risks in the practice of medicine. Those who help to operate the National Health Insurance Service, or who hold public appointments in institutions and poor-law hospitals, know themselves to be exposed to special attack. In the "Conduct of Medical Practice," published in book form by THE LANCET last year, it was pointed out that, in framing a contract for medical partnership or the engagement of an assistant, it is prudent to stipulate for membership of one of the defence associations. In partnership matters, indeed, quite apart from protection against litigation and the complaints of patients, the defence associations can give their services for the just and sensible solution of disputes between the partners where the law-courts are powerless, and where publicity is of no advantage to anyone concerned. The stronger, therefore, the membership of the defence associations, the stronger the position of the profession, both in its relations with the rest of the community and in its relations with its fellow members.

These general observations are prompted by a study of the annual record of the activities of one of the principal defence associations—the recently published report of the London and Counties Medical Protection Society, and similar sentiments have been expressed when the officers of the Medical Defence Union are giving an account of their stewardship. Membership of either body in no way absolves the member from the exercise of prudence or from maintaining the high standards of an honourable profession In such matters as the signing of certificates exactness is essential. If, for example, a doctor must give a certificate in respect of a patient whom he has not seen that day, this fact should be made clear. Further, as a matter of common sense and in their own interests, the members of a defence association should refer matters immediately to that body before dealing with them in any other way. Barristers have a favourite saying, that the man who is his own lawyer usually has a fool for a client. Not less than the medical profession, the legal profession is entitled to be called in early and to be given the fullest information. For his own protection, too, a doctor or surgeon should invariably secure X ray examination of any injuries where there is a possibility that fracture or dislocation has occurred; out of ordinary prudence he should be careful to provide himself with proof—in case it should ever be wanted—of the evidence which such examination reveals, or else of evidence that such examination was advised and refused. It may not be out of place to add here, since medical practitioners so frequently are brought into the courts as witnesses and not as plaintiffs or defendants, that the doctor who is asked to give evidence in cases other than those (such as Coroners Act proceedings), where the fee is definitely fixed, may save himself much ultimate trouble by having the amount of his remuneration ascertained and agreed in advance. Finally, to return to a matter more directly the concern of the medical defence societies, these bodies in self-protection must insist that their services cannot be given to those whose subscriptions are in arrear; the constitution and articles of the society must always be specific upon this point. To allow the benefits of such a valuable insurance to lapse for want of the punctual and regular payment of so small a premium would be a strangely false economy.

A HIGHER DIPLOMA IN MIDWIFERY AND INFANT WELFARE.

THAT the persistent high death-rate from puerperal sepsis is a matter of grave national concern was indicated by the Minister of Health in the House of Commons some weeks ago and more recently by the appointment of a Departmental Committee to advise upon the application of modern medical and surgical knowledge to maternity problems. Responsible medical opinion is also fully alive to the unsatisfactory state of matters, as is shown by the frequent discussion of causes and remedies in the medical journals. In our issue of last week we reported a discussion opened by Dr. JAMES YOUNG at the Edinburgh Obstetrical Society. Dr. YOUNG brought forward strong arguments in favour of the view that autogenous infection played but a small part in the causation of puerperal sepsis, that contagion was less important as a factor than many have believed, and that the main reason for the persistence of the high mortality-rate was trauma to the maternal passages during delivery. A hundred years ago the practice of obstetrics was largely a matter of "standing by" and allowing Nature to effect spontaneous delivery—of only interfering as a last resort, when Nature's efforts had failed. No doubt this policy was rendered necessary by the dire results following interference in pre-Listerian days, and was favoured by the comparative novelty of, and consequent unfamiliarity with, the obstetric forceps. To-day forceps are no longer a novelty. Their method of application is familiar to every senior student. His "cleverness" in midwifery practice is likely to be often measured by his readiness to use them, while the use of antiseptics now renders their employment comparatively safe. It may be that the conditions of modern busy general practice make it more difficult for the practitioner to pursue a policy of masterly inactivity than it was in the leisurely days of a century ago. It may be, as Dr. YOUNG indicated, that the obstetrician can plead that there is an increased sensitiveness to pain, or incapacity to bear it, on the part of the modern woman, as compared with her ancestors, or that her powers of resistance are less and exhaustion sets in earlier during labour. While modern technique has rendered the use of forceps comparatively safe as regards actual introduction of infection, the factor of trauma still remains, and no one who has seen many instrumental deliveries, and the bruised and lacerated tissues that seem to be the almost inevitable sequel of even the most careful and skilful use of forceps, will be disposed to quarrel with Dr. YOUNG in his contention that trauma from artificial delivery is one of the chief factors in the persistence of the high maternal mortality-rate.

If the conditions in modern practice are to blame they must be improved. Granted that forceps delivery in selected cases may actually prevent trauma, it must

also be granted that the incidence of pyrexia in cases delivered instrumentally has been found by careful observers to be larger than in those where delivery had been spontaneous. Many factors combine to incline both patient and medical adviser to hasten delivery when there is no real indication, maternal or fœtal, for interference. This is an aspect of the matter which will doubtless receive due consideration from the new Departmental Committee. It is an aspect that has been considered over and over again in these columns, while it received earnest attention from the authoritative writers who contributed to THE LANCET Special Supplement upon Difficult Labour.[1] Improvement of the conditions under which the bulk of obstetric practice is carried on, with consequent diminution of instrumental interference during the normal course of labour, will do much to diminish trauma during delivery. But this is not the only place to look for reform, and we are here chiefly concerned with the better education of the obstetrician in the practice of his art. Fortunately, in many of our medical schools greater stress is now being laid on a thorough training of the student in obstetrics than was the case a few years ago. But the difficulties are many. The curriculum is already overcrowded. The time allotted to the study of obstetrics is too short and the material available for practical teaching often scanty. Every general practitioner ought to be an obstetric specialist, with a good, practical training in antenatal work. He should know when interference is necessary, and when it is advisable to wait, and he should, when operative interference is indicated, be able to undertake it with skill and with the minimum degree of injury to mother and child. This is an ideal that is probably impossible of attainment by the undergraduate student. A certain amount of antenatal training he may get. He may learn the principles governing the conduct of labour, but experience and skill in the actual conduct of abnormal cases can only come by practice on his own account, under the supervision of those who already possess these qualities. This implies post-graduate work, and especially a term as resident in an obstetric hospital. After such a term of residence the possession of the necessary theoretical and practical knowledge might well be indicated by the granting of a higher diploma. If this were done the general level of professional training in a most important branch of our learning would be raised.

We have received from the Secretary of the Society of Apothecaries the regulations for admission to the "Mastery of Midwifery," the first examination for which is to be held in the autumn, and they show that the standard of the new diploma is to be a high one. Candidates must, after qualification, have held a resident appointment for six months in a recognised obstetric hospital. They must have attended a recognised antenatal clinic and an infant welfare centre for not less than three months each. One examination will be held, both written, clinical, and oral, in obstetrics and infant welfare and in the diseases of infancy. There will be three written papers, two of which will concern the science and practice of obstetrics and one the subject of infant welfare and the diseases of infancy. There will be a clinical examination at a hospital both in obstetrics and in the diseases of infancy, and finally there will be an oral examination in each of the two branches of the subject. Until 1932 practitioners of ten years' standing may enter for the examination provided that they can produce evidence that they have made a special study of the subjects for the Mastery. The establishment of the new diploma is an important step and one that should be favourably regarded by the profession as a whole. An impetus will thus be given to the post-graduate study of a group of subjects closely concerning the welfare of the nation, subjects upon which the public looks to the general practitioner for advice in directions of supreme importance. Further the Society of Apothecaries is right to believe that it will be an advantage to the public and to the medical profession that those who possess such special knowledge and experience in midwifery and infant welfare should have some mode of indicating that fact. But this implies the necessity that the really high standard foreshadowed in the regulations will be reached and maintained. Only in this manner can the general confidence of medical men be secured.

[1] Modern Methods in Abnormal and Difficult Labour. THE LANCET Office. 12s. net.

Annotations.

"Ne quid nimis."

ALKALIS AS THERAPEUTIC AGENTS IN GASTRIC DISEASE.

THE majority of physicians are agreed that alkaline salts are of great value in the treatment of gastric ulcer, but there is still a lack of precise knowledge as to the efficacy of the various agents commonly employed. Thus, whilst bicarbonate of soda is a time-honoured favourite in the hands of many practitioners and of the laity, there is a considerable volume of medical opinion which alleges that as an alkali it has decided disadvantages, and, at the other end of the scale, we find bismuth retaining its popularity in antacid treatment, although it has long been recognised that its alkaline power is of the slightest. Bourget [1] long ago laid down that whereas 2·3 parts of bicarbonate of soda were required to neutralise 1 part of hydrochloric acid, the same effect could be produced by 0·5 parts of magnesium oxide or 1·25 parts of ammonium magnesium phosphate. The same author is perhaps chiefly responsible for the doctrine that bicarbonate of soda, if administered in greater strength than 1 per cent., acts as a stimulus to gastric secretion in such a manner that its neutralising effect is more than counteracted. It is clearly desirable that we should know more about the value of the various therapeutic agents used in such quantities in gastric medication, and we therefore welcome the contribution by Messrs. Freezer, Gibson, and Matthews which appears in the *Guy's Hospital Reports* for April, 1928. These observers have carried out very careful laboratory experiments to determine the value of the various salts commonly used to neutralise hydrochloric acid, and they conclude that bismuth oxy-carbonate is the least effective of all, whilst tribasic magnesium phosphate appears to be the most suitable for the rapid counteraction of gastric acidity. They suggest at the same time that tribasic calcium phosphate, citrates, and calcium carbonate are almost equally effective, and finally they conclude that milk itself is probably the most important factor in the reduction of acidity owing to its buffer content which enables it to neutralise considerable quantities of acid. The results are of value in that they indicate certain useful antacid salts which are free of the risk of producing alkalosis such as has been observed in patients undergoing intensive treatment for gastric ulcer. But it is also clear that experiments carried out entirely in the laboratory must be accepted with considerable reserve before their conclusions are accepted as applicable to the human subject. In his recent text book Crohn,[2] stressing the point that the modus

[1] Bourget, L.: Krankheiten des Magens, Wiesbaden, 1906.
[2] B. B. Crohn: Affections of the Stomach, Saunders, 1927.

operandi of alkali treatment is frequently not properly understood, writes :—

The solution of an alkaline salt inserted into the fasting stomach both leaves the stomach rapidly through the pylorus and is readily reduced in its alkalinity by an outpour of acid gastric secretion. Thus, a strong solution of alkali increases gastric emptying and stimulates the stomach to secrete so as to re-establish the normal acid equilibrium. If during a fractional test-meal a dose of alkali is administered through the tube it will be noted that the acid curve is immediately neutralised and the free acidity wiped out or diminished depending upon the amount and dosage of the alkali used. The secondary phase of the reaction then ensues characterised by an acceleration of the secretion of gastric juice resulting in a subsequent rise of the acid curve equal to or above the previous altitude obtained by the test-meal.

And in a later passage he adds : " One should never try to alkalinise the whole acidity of the stomach. It is a mistake, since small doses of alkali give the necessary relief by relaxing the pylorus and relieving the intragastric tension." Whether sufficient evidence yet exists to permit of whole-hearted acceptance of the views of even so experienced an observer as Crohn is perhaps doubtful, but it is certain that before any final opinion can be formed concerning the value of these therapeutic agents observations must be made on the living subject in order to determine, not only the value of alkaline salts in neutralising a volume of hydrochloric acid in a test-tube, but which of them, if any, stimulate increased secretion by the oxyntic cells, and what effect they may have in producing pyloric relaxation and regurgitation of alkaline duodenal contents.

ALCOHOLIC POISONING.

IN the United States the number of deaths attributed to alcohol has considerably increased since Prohibition was introduced. For this anomaly there are various explanations, one of the most authoritative being that of the Statistical Division of the Metropolitan Life Insurance Company,[1] that the greater mortality is due to bad liquor rather than to heavier drinking. Dr. George Bigelow, however, of the Health Department of Massachusetts, declares [2] that the thousands of liquor samples examined annually for the police by his department show no appreciable increase in toxicity. A report by Dr. H. C. Lythgoe in the same journal states that, out of many samples of liquor supposed to have caused death, only one contained a toxic substance other than alcohol, and that was an isolated sample containing 23 per cent. of methanol. Dr. Reid Hunt who tested upon albino rats 100 suspected samples sent him by Dr. Lythgoe, found that the only poisonous substance present in any quantity was ethyl alcohol. In describing his experiments he says :—

" Solutions in which a part of the ethyl alcohol was replaced by an equal amount of methyl alcohol were tolerated in larger single doses than was ethyl alcohol alone ; thus, whereas rats died from 26 c.c. of the solution of pure ethyl alcohol, they survived doses of 31 c.c. of a solution in which 10 per cent. of the ethyl alcohol was replaced by an equal amount of methyl alcohol, and survived 34 c.c. when 20 per cent. of the ethyl alcohol was replaced by methyl alcohol. If a small part of the ethyl alcohol was replaced by methyl alcohol the preparation was less toxic in both acute and chronic experiments than were the preparations containing only ethyl alcohol ; the presence of the methyl alcohol lowered the acute effects (by diminishing the amount of ethyl alcohol, but such amounts of methyl alcohol were not sufficient to have a cumulative toxic action."

Going on to discuss the problem of alcoholic poisoning in the U.S.A., Dr. Hunt remarks that a certain number of deaths have been reported in the past from drinking methyl alcohol, but that very few have occurred recently. There is very little evidence, he says, that the deaths which so often follow consumption of illicit liquor are due to anything but ethyl alcohol. A deeply intoxicated man only requires a slight further dose to kill him, especially when the liquor is very potent. In three cases of death from " poison whisky " reported to Dr. Hunt, the liquor contained 60 to 80 per cent. of ethyl alcohol and no other poison. This is an enormous alcoholic strength.

These experiments on animals are thus held to show that ethyl is decidedly more toxic than methyl alcohol; the latter is admitted to have a certain cumulative action, but Dr. Lythgoe says that there is no evidence of its being harmful in the quantities in which it is found. He reports, further, that genuine bottled-in-bond whisky was slightly more toxic than nearly all the illicit liquor examined, and states that whisky, aged in charred oak barrels, becomes more poisonous as its age increases. Such conclusions will be regarded with astonishment in this country, where well-matured whisky has long been regarded as relatively innocuous and methyl alcohol as a dangerous drink. Pantaleoni has recently found that a mixture of equal parts of methyl and ethyl alcohols is more toxic to cats than either alcohol alone, and this may possibly account for some of the anomalous experimental results. But the truth is that though rats and cats are very well in their way, the question at issue concerns only the action of these alcohols on human beings. It is conceivable that by long centuries of use man has acquired an immunity—partial rather than complete—towards ethyl alcohol, which he has never had to cultivate for the lower homologue. Again, it may be that human beings more readily develop an immunity towards one alcohol than towards another. Cats and rats, having no previous experience of intoxication, either ancestral or personal, are entirely unprotected from its action, and though this does not explain the different effects observed on the two animals, it raises a reasonable doubt about the relevance of experiments conducted on animals whose inheritance or experience is so different from that of man. At any rate it is worth recalling evidence from other sources.

In his book on " The Action of Alcohol on Man," written during the late war, E. H. Starling says that the effects of methyl alcohol are " very deleterious, and its use as an intoxicating agent for a few weeks had led in many cases to permanent blindness, due to atrophy of the optic nerve." A study of the literature of the subject shows that about the year 1898 a number of cases of blindness, due undoubtedly to the drinking of essences, were noticed in the United States and West Indies. At first they were attributed to the ginger and other characteristic constituents of the essences, but careful observation showed that the liquids which did the harm were those in which methyl alcohol was a solvent. In 1904 Buller and Wood described 275 cases of serious poisoning by methyl alcohol (153 cases of blindness and 122 of death). Later, in Berlin, 130 men drank " brandy " containing one-third methyl alcohol and two-thirds ethyl alcohol (presumably with some water). Of these drinkers 50 or more died, 42 became blind, and some recovered. Baskerville has reported 725 cases of wood alcohol poisoning, which included 390 deaths, and 90 total and 85 partial cases of blindness. There are many other recorded cases, and it has been deduced from them that the action of methyl alcohol is, pharmacologically, quite different from that of the higher homologue. The effect of a single dose of either is much the same, but with the methyl compound both intoxication and recovery are slower. It is true that in acute fatal intoxication of *lower animals* a slightly larger dose of methyl alcohol can be tolerated, but even in these species it affects chiefly the most highly differentiated nervous structures, as is shown by the prolonged coma induced ; and it is well recognised that poisons which affect such structures powerfully become proportionally more dangerous the more highly developed the nervous system of the animal. Whereas ethyl alcohol is easily oxidised to carbon dioxide and water in the animal system, and these products are rapidly expelled, the oxidation of methyl alcohol is slow and does not always go on to its final stage, formic acid apparently being slowly formed and slowly

[1] Statistical Bulletin, March, 1927, No. 3.
[2] New England Journal of Medicine, 1928, cxcviii., 227.

expelled. An animal is said to take some days to get over a bout of methyl alcohol, and it may be noted that the early effects of this spirit are not exhilarating. Whether or not it is true that ethyl alcohol "inspires us and fires us with courage, love and joy," we have no reason to suppose that pyroligneous spirit produces anything better than dullness of mind and sight.

SPLENOMEGALY DUE TO A FUNGUS.

ATTENTION was drawn in our columns recently[1] to French work performed during the last two years which goes far to prove that certain cases of the type usually diagnosed as Banti's disease or splenic anæmia are due to the infection of the spleen by a fungus. It was pointed out that in this particular type of splenomegaly the appearances presented by the spleen are identical with those described some years ago by C. Gamna as a new condition, and named by him splenogranulomatosis siderotica. So far back as 1913, Dr. A. G. Gibson, of Oxford, had noticed the presence of mycelial threads in spleens removed from cases of Banti's disease, and in our last issue Dr. Gibson, with Dr. J. Fawcett of Guy's Hospital, describes a further case in which mycelial elements were not only demonstrated in the spleen and recovered in pure culture, but the mycelia actually produced a splenomegaly on injection into a monkey and were recovered from it by culture of the blood. It is unfortunate that the monkey went the way of so many monkeys used for experimental purposes, and anticipated the end of the investigation by developing generalised tuberculosis. Even so, however, Dr. Fawcett and Dr. Gibson consider that they have fulfilled Koch's postulates and are justified in claiming the fungus they isolated as the cause of the splenomegaly in the patient and in the monkey. It is presumably the same organism as that described by Nanta as *Aspergillus nidulans*, and by Emil-Weil and his co-workers as *Eurotium amstelodami*. Sir Aldo Castellani, to whom the fungus of the Guy's case was submitted, identified it as belonging to the genus nocardia. The diagnosis of the condition from other forms of splenomegaly forming the Banti group appears to be difficult. A noteworthy feature of the Guy's case was the presence of a leucocytosis, in contrast with the leucopenia found in typical splenic anæmia. The presence of pyrexia also appears to have some importance in the diagnosis, though apyrexial cases are described by French authors and also in a recent contribution on the condition from Roumania.[2] On macroscopic examination of the spleen, suspicion as to the existence of the condition may be aroused by the presence of minute yellowish scars, when the diagnosis may be confirmed by the demonstration of mycelial threads in these areas.

HARVEY'S BOOK IN ENGLISH.

THE tercentenary of the publication of Harvey's "De Motu Cordis" has given an occasion for the disinterment of the only contemporary English version of his immortal treatise. This translation by an unknown hand was published in 1653 and again in 1673. Since that date it has never been reprinted, its place having been taken by Dr. Robert Willis's translation, published by the Sydenham Society in 1847. The new edition of the book has been edited for the Nonsuch Press by Mr. Geoffrey Keynes, F.R.C.S., assistant surgeon at Harvey's hospital, and has been printed in Holland on hand-made paper in a limited issue of 1500 copies. It is a book of great beauty, and is further distinguished by having a copper plate illustrating the valves in the veins of the forearm, engraved after a new drawing by Stephen Gooden. Mr. Keynes claims with some justice that the contemporary translation is well worth preserving, even if in respect of precise accuracy it falls short of the "dull excellence of the Victorian text." It is more vigorous and expressive than Willis's translation, and represents more nearly what Harvey would himself have written. Mr. Keynes has collated the texts of both editions of the seventeenth century, and has done such polishing as seemed absolutely necessary. He adds at the end an editorial postscript and textural notes recording the more important emendations. Scientific treatises do not often receive the care which is commonly given to works of literary interest. In the present instance it seems to have been well worth while, for the book is acknowledged to be one of the landmarks in the history of human thought. Sentiment demands that it be available in the form in which Harvey himself saw it, scholarship that it do not fall short of the standards of modern times. We congratulate both publisher and editor on the result of their labours.

[1] THE LANCET, April 14th, p. 767, and May 5th, p. 933.
[2] Sur la Splénomégalie Mycosique. By M. Popper and C. Rateanu. Bull. et Mém. de Soc. Méd. des Hôpitaux de Bucarest, February, 1928, p. 48.

THE TREND OF MEDICAL PRACTICE.

TWO years ago the Association of American Medical Colleges set itself to discover the trend of practice in the United States, and with this object addressed a questionaire to doctors, trained at 52 different colleges, who had graduated in the years 1915 and 1920. Nearly 5000 letters were sent and about 76 per cent. of the recipients answered. The results are presented by Dr. H. G. Weiskotten,[1] and without going too closely into the statistics, which contain some sources of fallacy, it may be said that certain facts have been established. First, there has been a distinct increase in the number of medical men taking to specialist occupations; assuming that those of the 1920 class who intend to specialise do so within the next five years, the number of specialists in this class will be 9 per cent. greater than in the 1915 class. Secondly, there has evidently been an increase—though not so large—in the proportion of doctors holding salaried appointments, the number of which has doubtless risen with the spread of medical education and with administrative reforms. The first tendency is, of course, connected with the urbanisation of the United States, where, as in the older communities, the people are drifting more and more into towns. Medical men prefer to work in the large centres of population, and country practice, often involving the sole charge of a few poor and widely scattered patients, is carried on under such difficulties that the cities attract most of those who wish to make a good livelihood and have the ability to do so. Thus 40 per cent. of the graduates of 1920 had made their homes in towns with 100,000 inhabitants or over, although not much more than a quarter of the population at large is thus disposed. On the one hand, this tendency arouses alarm in those who have the care of the rural population at heart, and on the other it encourages specialisation among the practitioners who have to find a living beside many others of their kind. The same course of affairs is apparent elsewhere. In Berlin, for example, there are 14·9 doctors per 10,000 inhabitants, compared with only 7·45 in Germany as a whole,[2] and over 30 per cent. of German doctors describe themselves as specialists. In considering these figures it should be borne in mind that the term "specialist" bears a wider interpretation abroad than it does in this country. In the United States the number of men taking up the branches of "internal medicine" and surgery—many of whom would not be called specialists in England—is larger than in any other group except diseases of the eye, ear, nose and throat which are generally grouped together. The inquiry by the Association of Medical Colleges was made for the practical purpose of finding out what the students wanted to learn, and Dr. Weiskotten does not speculate on the reasons which lead them to specialise. He merely remarks that "these tendencies are undoubtedly in response to opportunities offered and demands made by society upon the medical college graduates." It is worth considering, perhaps.

[1] Bull. Assoc. Med. Coll., April, 1928.
[2] THE LANCET, April 7th, p. 731.

whether in this country good work might not be done by such a body as this Association, which could consider many questions arising concerning the present and future of medical education. A voluntary association of teachers would have much greater scope than the General Medical Council, which is limited in some directions by statutory considerations.

THE LATE SIR DAVID FERRIER.

IN recognition of Sir David Ferrier's pioneer work and scientific eminence it is the welcome idea of his friends and colleagues to perpetuate his memory in some permanent form. A letter has accordingly been sent out to members of the medical profession stating the intention of raising a fund for a Ferrier Memorial, and a committee of subscribers is being convened who will meet shortly in order to decide what form the memorial should take. The letter is signed by Sir Charles Ballance, Dr. William Bulloch, Sir James Purves-Stewart, Sir StClair Thomson, and Dr. Aldren Turner, the last named acting as treasurer. Those who reply favourably to the invitation—and we hope that this will include all those invited and many others—will be placed among the first list of subscribers, and it may be mentioned that, for the purpose of publication in the press, the names but not the amount of the subscription will be made known. We trust that many of our readers, whether or not in receipt of the circular letter, will support the movement and send their donations for the Ferrier Memorial Fund, either to Dr. Aldren Turner, 18, Harley-street, W. 1, or to the Westminster Bank, 1, Cavendish-square, London, W., when a receipt will be received from the bank.

VISCERAL SENSATIONS AND COUNTER-IRRITATION.

IN his Croonian lectures, the second of which we publish this week, Dr. Charles Bolton criticises [1] the theory of visceral sensation put forward by Dr. W. W. Payne and Dr. E. P. Poulton, who have shown [2] that œsophageal pain results from a stretching force in the viscus and have attributed it to tension exerted on "pain nerve-endings" in the walls. The pain, they pointed out, may be relieved either by peristaltic contraction, which overcomes the stretch, or by postural adaptation, which increases the capacity of the organ so that the tension is reduced. Tonus was defined as the tension of plain muscle during its diastole, and it was found that pain produced experimentally was associated with high tonus. The account of their further investigations, just published [3] is of considerable clinical importance, the more so as nearly all the numerous experiments were made on the observers themselves, whose accuracy can be depended upon.

The first part of their work is concerned with nausea, and as people disagree about the meaning of this term, they begin by defining it as a sensation felt at the back and lower part of the throat, usually unassociated with pain. It is often accompanied by —but should be distinguished from—uneasy "sinking sensation" in the pit of the stomach. Nausea was induced by swallowing rubber bags containing variable quantities of air, whose pressure was recorded on a moving drum. The sensations of the subject, as signalled, were recorded on the same drum, and their relation to changes of pressure within the bag, and therefore to tension in the œsophagal wall, could thus be noted. A general transition was observed from the sensation of "nausea alone" to "painful nausea" and "pain alone." The fact that nausea was felt during œsophageal *relaxation* was held to suggest that the mechanism of its production is essentially the same as that of visceral pain, but because nausea comes on at a lower diastolic pressure than pain does a different type of end-organ is probably involved, reacting to a lower tension.

"The relation of nausea and œsophageal pain is thus very similar to the sensations of pressure and painful pressure on a skeletal muscle, or of touch and pin-prick on the skin. In each case a slight stimulus produces the specific sensation and the latter gradually disappears completely as the stimulus increases, and finally pain alone is left."

Like visceral pain, nausea can be relieved, Payne and Poulton consider, by peristaltic contraction or by change of posture; conversely it can be produced by anything which increases the tension on the specific end-organs. Dr. G. H. Oriel informs them that, at sea, the sensation of nausea is felt during the retardation of movement towards the bottom of the ship's descent, and this observation is brought into line with their own work by the statement that the retardation tends to cause "a dropping of the unsupported soft parts and, consequently, an increased degree of tension in the specific end-organs for nausea in the œsophageal wall."

The next symptom investigated was the sensation of "sinking" in the abdomen. A rubber bag was passed beyond the cardiac orifice and large quantities of air were introduced into the stomach through a catheter. The sinking sensation thus produced is regarded as due to increase of tonus in the wall of the viscus and is thus "analogous in every way to nausea." On the introduction of air a desire to eructate was felt deep in the mid-line about the level of the clavicle; the feeling was that of a lump or "globus" situated here which would be dispersed by eructation. It might also be described, they say, as a feeling of "wind," and must clearly be analogous to "globus hystericus." They regard it as "different in quantity from nausea, though the two are obviously closely related, since they are felt in approximately the same part of the body and occur during the relaxations of an œsophageal peristaltic contraction, if the tonus is slightly increased." Other gastro-œsophageal reflexes were carefully studied, including what they call the "anti-regurgitation reflex," and it was found that the effect of gastric distension on the œsophagus depends on œsophageal activity at the time of its production. The smell of ammonia stimulates this activity; it is abolished by swallowing iced water; and it is found to be greater when the subject is not paying attention to the experiment. What chiefly interested the investigators, however, was the cutaneo-œsophageal reflexes, in their relation to therapeutic counter-irritation. As usual, the activity of the œsophagus was measured by means of a bag, whilst the skin was stimulated by applying turpentine stupes, mustard-leaf plasters, or lin. camph. ammon. over the sternum or by pinching or rubbing with cotton-wool or the bare hand. The type of response was independent to the method of stimulation employed, but partly varied with the activity of the viscus just before it was applied. When the œsophagus was quiet stimulation caused immediate activity, which tended to die down after stimulation or during prolonged stimulation. When the organ was already active, counter-irritation usually decreased its activity sooner or later. The effect of rubbing or otherwise stimulating the skin at a distance—i.e., on the calf—was apparently just the same. So far, these particular experiments had been painless, but as counter-irritation is used in practice to allay pain, tests were made in which an œsophageal bag was filled almost to its full capacity, so as to produce continuous retro-sternal pain, and the result of rubbing the skin was again observed. The effect was comforting and the irritations caused a fall in diastolic pressure. According to Payne and Poulton's theory of visceral pain this relief might be traced either to a reflex increase of posture leading to a fall of diastolic pressure, and hence a lessening of tonus and tension on the pain nerve-endings, or else to frequent systolic contractions of the muscle-wall which take the strain off these endings. With an active œsophagus counter-

[1] THE LANCET, June 9th, p. 1161.
[2] Jour. Physiol., 1927, lxiii., 217.
[3] Ibid., 1928, lxv., 157.

rritation is apt to produce periodic waxing "and waning" of its movement, so that tracings resemble those of rather irregular Cheyne-Stokes breathing. As the tonus is lowered during the waning phase, while the number of contractions is increased in the waxing phase, the tendency is all the time towards the relief of pain. As, however, there was one experiment in which there was neither a fall in diastolic pressure nor an increase in contractions, the investigators admit that their theory does not provide a complete explanation. Possibly the cutaneous sensation produced by rubbing acts partly by diverting attention from œsophageal symptoms. It should be noted that when, owing to long stimulation, the posture of the œsophagus has reached its maximum counter-irritation has no reducing effect on the tonus and may even increase it.

CARLISLE INFIRMARY AND THE FEVER HOSPITAL.

AN assistant commissioner of the Charity Commission has just held an inquiry into a difficult question which has arisen at Carlisle. The Fever Hospital in that city was established in 1818 on what was then a rural site, and has ever since been managed under the terms of the original trust deed. It is now in the centre of a populous neighbourhood, which is regarded as unsuitable for an institution for the treatment of infectious diseases. Since, however, the City Corporation and the Carlisle Rural District Council have for many years past largely maintained the hospital, an application has been made to the Charity Commissioners to transfer its control from the trustees to the Corporation, and the Commissioners have prepared a scheme in that sense. This scheme is being strenuously opposed by the governing body of the Cumberland Infirmary, which is only 150 yards from the Fever Hospital, on the ground that, in the event of further extensions becoming necessary, the site and buildings of the Fever Hospital would provide the necessary means of enlargement, and that, in any case, an institution for the treatment of cases of infectious disease is in its wrong place amid a considerable population. The case for the Corporation is that to transfer the Fever Hospital to a rural site would involve an expenditure which cannot be faced. Dr. Joseph Beard, the medical officer of health, calculates that to provide a new isolation hospital with 70 beds would cost at least £5,000, without counting the site, furnishings, and fittings. The trustees of the Fever Hospital are willing to sell to the Corporation for £1000, but the Committee of Management of the Infirmary are prepared to buy it in the open market. Mr. Norman Maclaren, one of the honorary surgeons of the Infirmary, urged the importance of its extension, and pointed out that 150 beds would not be in excess of the needs of the district. Both he and the Dean of Carlisle laid stress upon the helpless position of the Infirmary if its only means of extension were removed. The position is one of great difficulty, but it would be highly regrettable if the Charity Commissioners should decide that it is better to keep an isolation hospital in a thickly peopled area than to permit a large and important voluntary hospital, with rapidly increasing responsibilities, to fail itself of its only practicable means of expansion.

DIAGNOSIS OF MEASLES BY ULTRA-VIOLET LIGHT.

Dr. W. H. Wadsworth and Dr. E. A. Misenheimer[1] decided to give ultra-violet irradiation to a child whose measles rash had faded five days before, and on exposing the skin to the rays in a darkened room they were surprised to see what seemed to be an ordinary generalised eruption covering the torso, face, and legs. This led them to try exposure to the rays during the pre-eruptive stage of measles, and they found that the eruption could be seen beneath the epidermis before it made its appearance in daylight. In 14 cases the rash showed on the skin at periods ranging from 33 to 76 hours after it became visible by ultra-violet light. The method further enabled them almost to negative a previous diagnosis of measles in two children who had been exposed to infection and whose temperature was as high as 103° F. In a case of scarlet fever the rash showed plainly 11 hours before becoming visible to the unaided eye. They express the hope that this simple procedure may be useful both as a means of early diagnosis and as a check upon tentative diagnoses in various eruptive diseases such as smallpox, enteric fever, scarlet fever, and syphilis. If their observations are confirmed there can be no doubt of their value in diagnosis. It would be a great advantage were we able to ascertain that the eruption of a given disease would appear on the skin in a certain number of hours, since it is generally held that most of the fevers are chiefly infectious in their early stages. The method might be also of value after an eruption has appeared; when, for example, the rash of rubella has broken up and imitated that of scarlet fever, which it can do closely, it would be very useful to see the original eruption by means of ultra-violet rays. Wadsworth and Misenheimer do not tell us the form of apparatus used nor do they clearly describe their technique. Probably, however, they employed a mercury-vapour lamp. In a preliminary attempt in London to reproduce their results several children whose measles rashes had been gone for three, five, and seven days, were exposed to ultra-violet light from carbon-arc lamps for ten minutes each in a darkened room, but no rash was seen. Another child was exposed 36 hours before the rash appeared, but again nothing was seen. Under a mercury-vapour lamp a child with Koplik's spots seemed to show rather more mottling than the controls, but it was thought that the pattern did not correspond with that of the rash which came out later.

[1] Jour. Amer. Med. Assoc., May 5th, p. 1443.

THE Royal Society of Tropical Medicine and Hygiene will celebrate its twenty-first anniversary by a dinner at the Café Royal, Regent-street, London, on Wednesday, June 20th, at 7.30 for 8 P.M. Prof. J. W. W. Stephens, F.R.S., the president, will take the chair, and the principal guest will be Mr. L. S. Amery, M.P., Secretary of State for the Colonies. On the following day (Thursday, June 21st), at 8.15 P.M., the annual meeting of the Society will be held at 11, Chandos-street, Cavendish-square, W., preceded by a demonstration at 7.45 P.M. At the end of the meeting Prof. E. Brumpt, of Paris, will read a paper on the Differential Diagnosis of the Intestinal Amœbæ in Man. Applications for tickets for the dinner may be addressed to the assistant secretary of the Society at 11, Chandos-street.

THE annotation on Birthday Honours, published in THE LANCET last week, should have contained the names of Mr. John Marnoch, C.V.O., Regius professor of surgery in the University of Aberdeen, who has been promoted to a knighthood in the Royal Victorian Order; Major-general Walter Holland Ogilvie, C.B., C.M.E., Director of Medical Services in India, who becomes a knight of the Order of the British Empire; and Lieut.-Colonel Henry Simpson Newland, C.B.E., D.S.O., surgeon to the Adelaide Hospital, who has been made a Knight Bachelor. The list of Appointments to the Order of the British Empire ought to have included the names of Dr. Mangaldas Vijbhucandas Mehta, of Bombay, and Dr. Kishori Lal Chaudri, Assistant-director of Public Health in the United Provinces, who are appointed Officers, and Mrs. Martha Isabel Garvice, senior lady medical officer of the Egyptian Ministry of Education, and Dr. Ruth Young, personal assistant to the Chief Medical Officer of the Women's Medical Service in India, who become Members.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Comdr. D. P. H. Pearson is placed on the Retd. List.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. W. J. Payne to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Temp. Lt. R. B. Martin relinquishes his commn.
Lt. on prob. J. G. Weston resigns his commn.
H. McNeill to be Temp. Lt.

ARMY DENTAL CORPS.

Capts. W. W. Pittuck and W. M. Ferguson to be Majs.

ARMY RESERVE OF OFFICERS.

Lt.-Col. M. P. Corkery, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY

Capt. J. K. Rennie (late R.A.M.C., T.A.) to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. G. F. Hardy, having attained the age limit, relinquishes his commn. and retains his rank.

ROYAL AIR FORCE.

Flight Lt. H. B. Troup is promoted to the rank of Squadron Leader.

Flying Officer F. F. Anslow is promoted to the rank of Flight Lt. (Dental) on promotion to the rank of Captain in the Army Dental Corps.

Flight Lt. (Hon. Squadron Leader) H. C. Perkins relinquishes his temporary commission on completion of service and is permitted to retain the honorary rank of Squadron Leader.

The undermentioned Flight Lts. (Captains Army Dental Corps) relinquish their temporary commissions on return to Army duty: F. S. S. Whiter and F. F. Anslow.

INDIAN MEDICAL SERVICE.

Lt.-Cols. J, W. D. Megaw and W. D. A. Keys (Bt. Col.) to be Cols.

Capts. J. E. Ainsley and R. A. Leembruggen to be Majs.

Lt. T. A. Malone to be Capt. (Prov.).

Lt.-Col. H. C. Keates retires.

COLONIAL MEDICAL SERVICES.

The following appointments have been made by the Secretary of State for the Colonies: Miss C. N. Twining, Lady Medical Officer (Kenya); Capt. M. Clayton-Mitchell, Resident Surgeon (Colonial Hospital, Grenada), and Dr. I. M. M. Aitken, Lady Medical Officer (Gold Coast).

"WESTMINSTER HOSPITAL WEEK."—The pathological laboratories, X ray, electrical, and other departments of Westminster Hospital were opened for public inspection on several days last week, and on Thursday there was a street collection, in addition to special collections at Waterloo and Victoria stations.

JOINT TUBERCULOSIS COUNCIL.—At a meeting of the Council held on May 19th Dr. Lissant Cox commented on a report by Dr. James Pearse (see THE LANCET, Jan. 21st, p. 154) dealing with the coördination of the public health services in county practice. In Essex, Hants, Gloucester, and East Sussex it is now the custom to appoint whole-time officers to act as assistant medical officers of health, school medical officers, maternity and child welfare officers, and tuberculosis officers. The Council considered that such a plan must be carefully safeguarded if it is not to cause deterioration in the tuberculosis service; in their view assistance in diagnosis or treatment by a consultant tuberculosis officer should be available for every case of tuberculosis, recognised or suspected. Dr. A. S. MacNalty said it was the policy of the Ministry of Health to carry out the recommendations of the Astor report. In rural areas the Ministry were sometimes asked, on the grounds of convenience and economy, to sanction the appointment of assistant tuberculosis officers who were also responsible for other public health services; in such cases the Ministry advised the appointment of a *chief* clinical tuberculosis officer with special experience, and also required the assistant officers to have had a certain amount of experience in tuberculosis.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXX.—THE AMBULATORY TREATMENT OF VARICOSE VEINS.

II.* REACTIONS, COMPLICATIONS AND RESULTS.

Normal Reactions Following Injection.

Immediate Reactions.—Apart from the actual prick of the needle as it penetrates the skin, the process should be quite painless: pain during the course of the injection means that the fluid is finding its way into the subcutaneous tissues, and is an indication for ceasing the treatment at once. After the completion of the injection the patient may experience on getting to the upright posture quite a severe shooting pain in the region of the puncture, which is invariably described as passing distally along the limb. This phenomenon is but rarely observed, and the pain never lasts more than one or two minutes.

Delayed Reactions.—The nature of these should always be explained to the patient before commencing treatment. Within about 12 hours of the injection the segment of vein becomes a little swollen and is tender to the touch; it may ache slightly, the pain usually persisting for about three days, after which it diminishes. In addition to this local aching pain some patients experience pain of more severe type on getting out of bed first thing in the morning, and sometimes on rising from the sitting to the erect position. This pain may last from seven to ten minutes and then pass off, and is apparently due to the alteration of venous pressure in the dilated veins following the change of position and affecting the vessel walls in the region of the thrombus. Some patients experience a similar pain on blowing the nose, coughing or straining, and others describe a "jumping" pain at the site of injection. This reaction of swelling and aching in the vein is always likely to be more severe where this overlies a bony surface such as the tibia, or in any situation where the bony contours do not permit the vein to sink back into the soft tissues. Occasionally slight redness of the skin over the injected segment may be seen, but this is unusual. Some patients, particularly those with a rather thick layer of subcutaneous fat, will show a slight degree of bruising along the line of the thrombosed vein. As this is always linear in distribution it appears unlikely that it is due to leakage of blood from the site of puncture. This bruising always clears up, but may take six weeks or more to do so. After about the fourth day the thrombosed vein commences gradually to decrease in size, and continues to do so for about three months. Local tenderness usually disappears within a fortnight.

General Quinine Reactions.—Constitutional effects due to the quinine in the injection are described, but rarely observed. The drug may be tasted a few minutes after the injection has been given; the patient may suffer from tinnitus or headache, or in susceptible subjects a rash may appear. Injections should never be given to women during menstruation since griping hypogastric pain may be experienced.

Abnormal Reactions.

Blood Blisters.—These are occasionally seen, and are due to leakage of blood mixed with quinine urethane into the subcutaneous tissues at the site of injection. They are usually about ½ inch in diameter and dry up in about three weeks. They can be avoided by digital pressure for a short time after the injection, followed by firm bandaging over the collodion dressing for about 24 hours.

Eschars.—These also are occasionally seen, and they are produced in the same way as the blood blisters, but the local damage is more severe, and

* Part I., dealing with General Considerations and Technique appeared last week.

they may take five or six weeks to heal. They may also be avoided by pressure and bandaging described above. Similar eschars may be developed at a point some inches remote from the site of injection, and these are mostly due to the fact that an extremely thinned and atrophic vein wall and skin is unable to react to the chemical phlebitis. Injections should never be given directly into regions where the skin is atrophic and the vein wall obviously very thin. It is a striking fact that after thrombosis has occurred these thinned and atrophic areas of skin show remarkable properties of recovery of their elasticity and suppleness.

Sodium Salicylate Method.

Of the many other solutions employed as intravenous sclerosing agents sodium salicylate appears at present to be the only one used at all extensively in this country. The solution is a sterile one of chemically pure sodium salicylate, made up in 20, 30, and 40 per cent. strengths. As the salt is not precipitated on standing there is no necessity to warm before using, but specimens should remain colourless; those showing discoloration after being kept some time should not be used, since they may give rise to untoward effects.

In essentials the technique employed is the same as that described under the quinine-urethane method, but there are certain points of detail to which attention must be paid. It is usual to commence with 2 c.cm. of the 20 per cent. solution, which should be sufficient to thrombose about 4 inches of vein. The extent of thrombosis produced by each injection must be the guide as to the strength and amount of solution injected at subsequent sittings. If the 20 per cent. solution produces the requisite amount of thrombosis, succeeding injections may be confined to this strength. If thrombosis is not produced, or if it is of very small extent, 2 or 3 c.cm. of the 30 or 40 per cent. solution should be tried until the desired result is obtained. More than 4 c.cm. of the 40 per cent. solution should never be given at one sitting. As, however, the veins appear to develop a remarkable degree of tolerance to sodium salicylate it is important to work up as rapidly as possible to the strength found necessary to produce the required thrombosis.

During the course of the injection many patients experience a cramp-like pain in the muscles of the calf, which persists for a few minutes. The local reactions following the injections are in the main similar to those described under the quinine-urethane method. My own experience leads me to believe that with the salicylate method patients get more pain immediately following the injection, but less reactionary pain. Furthermore, the extent of thrombosis is liable to much greater variations—it may be absent, and it may be excessive. But in cases which respond to this form of treatment the results are excellent.

Pulmonary Embolism.

The fear of pulmonary emboli has long deterred surgeons in this country from the employment of a method which seems at first sight to invite this disaster. That the danger of embolus is not a very real one is shown by the fact that in the cases treated by Linser (6000), Nobl (2960), and Sicard and Gaugier ("many thousands"), no single case of embolus has been observed.

In the literature of the subject I am only acquainted with four cases of death from pulmonary embolus. In some of these the technique employed was open to severe criticism, and in one case the patient had been operated on for fistula in ano. No fatality of this nature has been recorded after the use of quinine-urethane or sodium salicylate.

As a post-operative complication the risk of pulmonary embolus is about one in a thousand after a major operation, with a very much greater risk after operations on varicose veins. As a risk following injection treatment it is extremely remote, as the figures quoted above clearly show, and its interest becomes almost academic.

The reason for the absence of emboli doubtless lies in the adherent nature of the thrombi. The fact that the blood flow in varicose veins is distally directed may play some part, but this is probably only of secondary importance.

Varicose Ulcers.

The general principles to be observed in dealing with varicose veins complicated by ulcers do not differ from those outlined above. Large varices are invariably present in the region of ulcers, and are much more easily palpated than seen. Especial attention must be directed to these, but small doses should always be employed on account of the lowered tissue vitality. Once a week the ulcer and its surroundings should be cleaned with ether and all debris removed. The ulcer may then be dressed with Unna's paste or with gauze soaked in the following lotion: prepared calamine and oxide of zinc, grs. 30 of each; dilute solution subacetate of lead and glycerine, dr. 1 of each; lime water to 1 oz. The patient is instructed to repeat this dressing on alternate days after gently cleaning the ulcer with water.

Results and Contra-indications.

Cure should be attained in every uncomplicated case. Three months after the injections are complete the fibrosed veins should either be impalpable or present only as fine fibrous cords in the subcutaneous tissues. Symptoms due to the veins diminish almost from the commencement of treatment and crêpe bandages and elastic stockings should be given up as early as possible. In the ulcer cases healing is a gradual but steady process. The time taken for this to occur will depend upon the size of the ulcer and the extent of the varices. Complete healing should occur in 80 per cent. of the cases either before or soon after thrombosis is complete. In the remaining 20 per cent. of cases this process is delayed either on account of underlying bone infection or the presence of some other serious constitutional disease. Clinically it will be observed that the intolerable pain which ulcer cases suffer is lessened, or entirely absent after the first few injections.

The quinine-urethane method should never be used during pregnancy, though possibly some other sclerosing agent could be employed. The following conditions are contra-indications to all forms of injection treatment, and with the exception of the first are contra-indications to any surgical procedure. (1) Recent phlebitis in the saphenous vein area; (2) old deep thrombosis with compensatory dilatation of superficial veins; and (3) cardiovascular renal diseases.

It is undesirable to begin any injection treatment without having made a general examination of the patient, and it is advisable to become master of the practical details of one recognised injection method before trying others. The methods which have proved successful in my hands have been set out here.

REGINALD T. PAYNE, M.B., B.S., F.R.C.S. Eng.,
Chief Assistant to a Surgical Unit, St. Bartholomew's Hosp.; Registrar, Royal National Orthopædic Hosp.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL.—At the annual meeting of the Ladies' Association of this hospital, it was pointed out that while the death-rate of women patients among the booked cases is only 2 per 1000, among the emergency cases it is 50 per 1000. The former class consists of women who attend the ante-natal clinic, while the latter are cases sent in at the last minute.

BATTERSEA GENERAL HOSPITAL.—The Duchess of Hamilton has formally reopened, after renovation, the main section of this institution, which is also known as "The Anti-Vivisection Hospital." The chairman, Mr. S. C. Turner, stated that the equipment was worn out, the sanitary arrangements in a bad state, and the kitchen service inadequate, and that a new wing of 50 beds is needed. Lst year there were 18,761 casualty attendances and over 2000 cancer attendances.

Special Articles.

ON THE VALUE OF THE STATISTICAL METHOD IN PRACTICAL MEDICINE.

By PERCY STOCKS, M.D., D.P.H. Camb.,
READER IN MEDICAL STATISTICS, UNIVERSITY OF LONDON.

"General impressions are never to be trusted. Unfortunately when they are of long standing they become fixed rules of life and assume a prescriptive right not to be questioned. Consequently those who are not accustomed to original inquiry entertain a hatred and a horror of statistics. They cannot endure the idea of submitting their sacred impressions to cold-blooded verification. But it is the triumph of scientific men to rise superior to such superstitions, to desire tests by which the value of beliefs may be ascertained, and to feel sufficiently masters of themselves to discard contemptuously whatever may be found untrue." —Francis Galton.

We should all be ready to admit that without the aid of mathematics the sciences of physics, astronomy, and even chemistry would be mere accumulations of recorded observations without the possibility of linking these together into an ordered whole; in fact, they would be mere ghosts of sciences emerging from the obscurity of ignorance with no tangible shape or body. But all sciences begin by the collection and recording of observations, and it is very questionable whether any such collection of facts or experiences can attain to the dignity of being termed a science without the continual submission of the laws and theories which they suggest to the cold-blooded process of statistical verification which Galton speaks of.

It is customary to group the sciences into the "exact" sciences and those which are "descriptive," but this distinction can only be a matter of degree and not of kind. The degree of exactness of a science, when we come to think about it, is really a measure of its evolution—that is to say, of the amount of success with which the so-called "Laws of Nature" which make sense out of the happenings of the Universe have been crystallised out as definite and recognisable structures from the liquid mixture we started with. When every constituent in that solution has been isolated and its relation to every other worked out, so that the behaviour of those portions of the Universe we are studying can be predicted with a considerable degree of accuracy under every possible set of circumstances, then and not until then will the evolution of the science which deals with phenomena of that kind be complete or "exact" in the real sense of the term.

No science has yet reached that point, but some have advanced farther on the road to it than others—that is to say, the relations between some of the constituents of the solution are now defined and understood sufficiently to make it possible to predict behaviour in certain circumstances with some confidence. It is *the success of this prediction which is the acid test of the exactness of a science.* There is no a priori reason to suppose that the science of physiology, for example, is essentially any less exact than that of astronomy; the only reason why it seems so is surely because it is so much easier in astronomy to isolate the different units and the different factors acting upon them than in physiology, where we have greater difficulty in disentangling all the multiplicity of influences at work at one and the same time. Not until every one of the factors acting and reacting on each organ of the body has been studied so completely that the behaviour of that organ can be accurately predicted under a given arrangement of these factors can physiology be said to have attained to "exactness."

And here let me remark that we cannot be sure that in this sense any science can ever be perfectly exact, for we have no certain proof that the same set of causes necessarily results always in the same effect; all we know is that in certain kinds of reactions, particularly in physics and chemistry, a very close prediction of the result can be reached by fixing all the known factors. An absolutely accurate agreement with prediction is scarcely ever secured even here—that is, the results of an experiment repeated under the same conditions always show some degree of scatter about a mean value. Though we naturally attribute all such variability of the result from the prediction as due to our not knowing or taking into account all the variables, there is no proof that we could ever obtain perfect accuracy in prediction even if all the variables were known and fixed.

This takes us dangerously near to metaphysics, and we may content ourselves with the statement that at any rate, whatever the ultimate limits are, the exactness of a science increases as we are able to isolate *and measure* the action and reaction of all the various factors concerned in the phenomena with which the science deals. If we admit the crucial test of our ability to predict happenings with given arrangements of causes, then we must admit that without measurements of a multiplicity of factors concerned, most sciences can never be adequately developed, and this is where the study of statistical methods comes to our aid, for statistical methods have been defined as "methods specially adapted to the elucidation of quantitative data affected to a marked extent by a multiplicity of causes."

Statistics and Medical Practice.

How does all this concern the general practitioner? It concerns him vitally, for his whole aim is to so understand all the forces at work in the human body that, starting from any given derangement of the cells or functions in that body, he will ultimately be able, by modifying or helping or checking this force and that force, to arrive at the required result—namely, the perfect health of the body—nay more, to prevent it ever being departed from.

But, it will be said, we are a long way from that and it is rather in the clouds. Let us come to earth then and notice that both diagnosis and treatment as we have to practise it to-day and to-morrow rests on the law of probability, which forms the basis of a great deal of what we know as the theory of statistics. When we started to practise we found to our dismay that not many diseases conformed even approximately to any type described in a text-book, and the process of diagnosis usually consisted in weighing, one against the other, the probabilities that various signs and symptoms arose from certain causes. We may not be conscious of it, but the fact remains that these probabilities are, in the process of our decision, being estimated on the basis of our previous experience or from what we know about the accumulated experience of our predecessors. Thus, assuming that we are making the utmost use of all the knowledge that has been gained, the accuracy of the diagnosis depends upon (1) the amount of previous experience which has been collected together by ourselves and others; (2) the manner in which it has been analysed, defined, and measured, so that any combination of symptoms can be equated to a definite probability of a set of "causes."

Again, when it comes to treatment we are not in the happy position of the physicist who can stake his life on the "certainty" that when he heats a gas it will expand, or of the chemist who can be sure that when he adds a mineral acid to blue litmus it will turn red. What we have to do, since our science is not so precise, is to weigh up the probability that a certain line of treatment will benefit the patient, and this probability is entirely based upon past experience of that treatment in the presence of similar symptoms, and is the more likely to lead to success in proportion to the care and accuracy with which the past experience of it has been analysed. To put the matter in another way, in the practice of medicine we can rarely, if ever, so standardise all the variable factors—even if we knew all about them the human element would usually compel a compromise somewhere—as to be able to promise without

reservation that a certain result will follow a certain plan of action. All we can predict is that if such and such a plan be followed there will be a *tendency* for the desired result to follow. In other words, instead of causation we have to do with *correlation*—that is, however carefully we may fix the conditions there will always be some variability in the result which we cannot control.

It is with the study of this variability and its effect on the precision with which we can predict results in the presence of a multiplicity of factors, of which only a few can be controlled, that a very large part of statistical theory is concerned, and I therefore contend that its importance for the advancement of medicine from empiricism to exactness can scarcely be exaggerated.

Dangers of Hasty Generalisation.

I do not need to quote examples to show how often in the past, over long periods of years, tens of thousands of patients have been subjected to some form of treatment in the erroneous belief that it had been proved to be beneficial, whereas an application of statistical methods at an early stage might have shown that it was useless. It is by this kind of thing that the progress of medicine has been so often retarded and much expensive effort wasted; some medical practitioners attribute the cure of a malady to a particular treatment because they have seen it associated with that event in a few cases; others attribute it to another treatment for the same reason, whereas both are mistaken in having hastened to generalise whilst overlooking the normal expectation of coincidences, which could easily be measured by the theory of probability. Most diseases have been attributed to chills and syphilis on this account.

Quetèlet, the great Belgian statistician, in one of his fascinating Letters on the "Theory of Probability," published in 1846, makes some caustic observations about medical men; thus he writes:—

"The doctors will excuse me if I retort upon them a little of the scepticism which they generally use pretty freely against statistics. If I suppose that they treat at hazard and without doing good or ill, it will follow from the law of possibility that the greater number will lose but few patients. Some will lose many and keep silence; others will save many, and it is generally these who will raise their voices. In stating the results of their practice, and I think them sincere, they only establish a fact which I willingly accept. Where is the evil? It is found in their sudden abandoning statistics to throw themselves into the domain of conjecture. They do not confine themselves to stating 'I have saved many that were ill,' but they add 'It is because I discovered the cause of the malady that I have learnt how to apply the true remedy.' But they do not in any way prove the connexion between the effect and the pretended cause; this, however, is what they should do."

I am afraid we must admit that his words are not quite devoid of sting to-day. At any rate it is still possible for the editor of a leading newspaper to write of us (May 26th, 1928)—let us hope it is mostly in jest:—

"All I can say is that the faith of doctors in doctors arouses my stupefied admiration. Their gift of superstitious credulity makes me gasp with envious reverence. If I could believe in all they believe in I could believe in anything."

Statistics and Public Health.

The general principles I have endeavoured to outline apply still more emphatically to the domains of public health, where the care of the individual gives place to the care of a population. We are now so accustomed to think of birth-rates and death-rates as definite entities that it comes as a shock to realise that the idea of the stability of statistical ratios is a relatively modern conception; in fact, it may be said to have originated with John Graunt, who published in 1665 his "Observations on the Bills of Mortality," a work of great historical interest to all students of vital statistics. By his study of the records of burials and christenings in London, Graunt succeeded in demonstrating some of the most important facts in vital statistics, which were quite unknown—viz., the regularity, when studied in mass, of vital phenomena such as accidents, deaths, and other social events, the relatively high mortality-rate in infancy, the greater mortality in towns than rural areas, the excess of male over female births, and the roughly equal numbers of the sexes in the population.

Once it was realised that births and deaths followed definite laws of probability in the mass, the way was open to all kinds of advances in social science; for example, the evolution of the principle of life insurance quickly followed, with the foundation of some of the great assurance companies. Along other lines Graunt's work was followed up by a succession of workers down to Dr. Farr, who built up our national system of vital statistics. It has been truly said that there could not have been a Public Health Act without vital statistics, and that almost every useful advance which has been achieved since in the direction of improving the health and well being of the nation has resulted from the collection of statistical data, scientific treatment of them, and a correct interpretation of their significance.

Value of Accurate Death Certification.

It is therefore surprising how slight an interest the average medical man in practice takes in such work, for the foundations of our national mortality statistics, which have been a pattern to the world, were laid by Dr. Farr without the aid of any Public Health departments and almost entirely upon the information regarding deaths furnished by medical practitioners throughout the country, and it is still true that through the medium of the certification of deaths and notification of infectious diseases the general practitioner is responsible for almost all we can learn regarding the principles which underly the rise and fall of epidemics and the incidence of other important diseases such as cancer.

It is not necessary to stress the fact that the value of any such system of national vital statistics, and of the conclusions which can be drawn from them, depends ultimately on the amount of care which each individual medical man devotes to making as accurate a return on the death or notification certificate as it lies in his power to do, for although it may be true that certain kinds of chance errors tend to cancel out in the aggregation of large numbers, it is also true that the massing together of careless observations could scarcely lead us anywhere. This is especially true in regard to cancer at the present moment, for the statistical method is as likely to unearth a clue to its causation as any method which is being employed; hence the importance of endeavouring to secure the utmost possible accuracy in death certification of this disease, and to this all such considerations as the private prejudices of relatives of the deceased should give place. It should surely give us serious cause for thought that the Registrar-General should have to form the conclusion that the very large local variations in registered cancer mortality in England and Wales which remain after allowing for all other known factors may be attributable to differing accuracy or faithfulness with which medical men in different districts enter cancer as a cause of death on death certificates, a view with which I personally do not agree though I admit there is much to support it. That it is at least of some importance cannot be doubted. Here then is a great service which the medical man can render to the advancement of knowledge in the ordinary course of his practice.

Team-work in Cancer Research.

But there is another form of service which he can render, one which must mean a little sacrifice of time and energy without compensation other than the satisfaction of having tried to make his unique opportunities of observation useful to those of his colleagues who, like himself, are honestly trying to establish the causes of disease and the best means of treatment, but by methods with which he may be frankly bored. I refer to the voluntary participation in such inquiries as that on the treatment of varicose

ulceration now being carried out by the British Medical Association. It must necessarily be that some inquiries of this kind, however carefully planned, may lead to nothing after entailing much labour to a lot of people, but that is true of all research work, which has to record many failures to each success. And it is also true that we have a natural prejudice against the filling in of any more forms than the law compels us to do. Nevertheless there are great possibilities in such team work, and I make no apology for the appeal which appears in the correspondence columns of to-day's issue for offers of help in furnishing certain information regarding cancer cases. Statistical research of this kind will doubtless offer few attractions to those who find their complete satisfaction in the immediate results of a surgical operation, but to those who look ahead to a time when preventive medicine will have rendered most surgical operations unnecessary, I hope that in this brief article I may have conveyed the impression that there are some glimmerings of sense in it, and that it is quite capable of suggesting new lines of progress or even of leading directly to actual new discovery.

CHRONIC ARTHRITIS IN ADULTS.

DIAGNOSIS AND TREATMENT.

THE following is a summary of certain sections of Dr. Alison Glover's report [1] to the Ministry of Health. It records some of his conclusions on matters of everyday importance, and is intended also to draw attention to the valuable source of information which he has placed at the disposal of practitioners and public authorities.

Diagnosis.

When a patient presents himself with any symptom or sign suggestive of chronic arthritis the practitioner has two clear and urgent duties; the first the attempt to distinguish the variety of arthritis and the stage to which it has progressed; and the second, even more important, to begin that determined search for an infective focus in which later he may have to invoke the specialist's aid. It may be impossible to distinguish the variety or type of arthritis, but an attempt to do so should result in a complete record of the case as first seen—a record not confined to the joints, but envisaging the general condition of the patient as well. A scientific classification of the many forms of chronic arthritis is not yet possible, but various forms may usefully be distinguished (see table).

A certain proportion of cases will not fall into any of the groups indicated by this table, and it does not, of course, include those relatively uncommon specific forms of chronic arthritis in which the causal agent is more or less known—e.g., those following scarlet fever, dysentery, undulant fever, meningococcal infection, gonorrhœa, tuberculosis, hæmophilia, and syphilis, or the neuropathic (Charcot's) form of the disease.

Focal Sepsis.

Even in gout, the most undoubtedly metabolic disease of the group, an infective focus may play an important part in precipitating attacks, and it should always be looked for. The seat of infection may be the genito-urinary tract, appendix, bladder, intestinal tract, nasal sinuses, middle ear, tonsils, or lastly and most often, the teeth or gums. In the great majority of cases in which focal infections are regarded as causing chronic arthritis the infecting agent is thought to be a streptococcus, usually of the *viridans* group. Many other organisms, however, can give rise to the condition.

In some of the severest cases of rheumatoid arthritis, especially in young women, no focus can be found after the most careful search; moreover, infection is probably present in the mouths of 75 per cent. of the population over 40 who remain free from arthritic symptoms. Nevertheless the theory of focal sepsis has brought fresh hopes into the outlook upon chronic arthritis, and rightly considered, early acted upon, and soberly applied, it greatly improves the prognosis of at least half the cases.

Dental sepsis is of two kinds: (*a*) "open," in which the organisms and their toxins can escape into the mouth; and (*b*) "closed," in which it can escape only into the surrounding bone, the blood, or the lymphatics. Often both types are present together, and opinions differ as to which plays the greatest part. In open sepsis the area of absorption may be extensive and the dose of toxins large; secondary infection of the naso-pharynx and intestinal tract may follow. Caries by itself scarcely seems important from the point of view of arthritis, and it is the various conditions covered by the term "pyorrhœa" which are the chief open types of dental sepsis which cause arthritis.

Pyorrhœa is generally taken to mean a form of chronic periodontal disease characterised by discharge of pus around the teeth. The chief signs are gingivitis of the interdental papillæ, pockets between the teeth and gums—especially between the teeth—absorption of bone, recession of gums, deposition of hard tartar beneath the gum margins, discharge of pus from the pockets and loosening of the teeth. Many mouths show gingivitis with deposition of soft tartar on the lower front teeth and upper molars, but no pockets. These cases are rare in true periodontal disease, but are mainly due to dirt and neglect, and improve rapidly with treatment.

Closed sepsis, due to the death of pulps and the decomposition of the organic contents in the root canals, with escape of organisms and toxins at the root apex is, from the point of view of arthritis, even more serious. Often it can be detected only by radiography, for it may be associated with clean gums and perfectly healthy looking teeth. Crowned teeth are especially liable to apical infection.

Whilst the search for a septic focus should be very thorough the dental treatment adopted should as a rule be cautious and gradual, only thoroughly incriminated teeth being removed at first. Wholesale extraction is seldom necessary and can only be justified by exceptional circumstances. In view of the immense number of persons who have much dental sepsis of all kinds and yet escape arthritis it is clear that the normal human body has to have a high resistance to the organisms and their toxins.

Tonsillar sepsis, of supreme importance in acute rheumatism, comes only second to dental sepsis in relation to chronic arthritis. The septic tonsil responsible is often small and comparatively innocent in appearance. It is sometimes retracted, and the lower pole is commonly the more infected. When such tonsils are found in a patient with chronic arthritis their enucleation is essential, nothing short of this operation being worth while.

Nasal sinusitis may be secondary to dental infection. It sometimes gives rise to no local symptoms, being only demonstrable by transillumination, by radiological methods, or by puncture, the last giving the most conclusive evidence. The slighter latent forms of sinusitis are apparently more likely to give rise to arthritis than the severer forms. Willcox points out that although adequate surgical treatment is essential, it is well to proceed cautiously, and a sufficient interval should elapse before operation on other foci which may be coexistent, if excessive autoinfection is to be avoided.

Intestinal infection is usually secondary to oral or dental sepsis, often being associated in rheumatoid arthritis with achlorhydria. The colon is especially implicated, though the signs of any active colitis are generally absent in chronic arthritis, other than the dysenteric variety. Treatment should aim especially at the correction of stasis, and the Plombières douche or colon lavage is now considered one of the most efficient means of treatment. It is not, however, free from risk and should be given under continuous expert supervision, each case being considered

[1] Ministry of Health. Reports on Public Health and Medical Subjects, No. 52. Chronic Arthritis, with special reference to the Provision of Treatment. By J. Alison Glover, M.D. H.M. Stationery Office. Pp. 103. 1*s*. 6*d*. (See THE LANCET, May 12th, p. 974.)

separately. Some authorities still mainly use intestinal disinfectants administered by mouth.

The *genito-urinary tract* is a common focus of infection, and chronic arthritis is sometimes due to secondary invaders such as streptococci which have followed upon gonococcal infection. Inflammation in the posterior urethra or prostate, vesiculitis, and endocervicitis may also be important.

Respiratory infection appears to be a source of infection in some cases, whilst *cutaneous infections* may also be responsible.

Vaccines.

Vaccine therapy will be unjustly discredited if vaccines are administered while the patient still has in his body a removable focus, not removed, or one that is capable of drainage, undrained. It will also be discredited if employed too late in the disease—i.e., when the joints are fixed and deformed. In the early stages of chronic arthritis, particularly of the rheumatoid type, the skilful use of autogenous vaccine of *Streptococcus viridans*, grown, say, from the granuloma at the root of an infected molar, may be of great therapeutic value. It is essential, however, especially in the frail subjects of rheumatoid arthritis, to start with very small doses and very gradually increase them, avoiding either general reactions or signs of reaction. As many as 15 or 20 doses may be required, the intervals being at first five days, and later up to ten days. The vaccine should never be administered until the reaction from the previous dose has entirely subsided, and if a reaction with pyrexia and general malaise occur the interval should be increased and the subsequent dose halved. Too long an interval is far better than one too short.

Various forms of stock vaccine may be employed when no infective focus has been found. Injection (intravenous, intramuscular, or subcutaneous) of such substances as typhoid vaccine, proteases, sera, colloidal metals, and milk may be employed to produce a non-specific reaction with leucocytosis, high temperature, rigors, and shock. This treatment has met with considerable success, especially in rheumatoid arthritis in which no very definite focus of infection could be detected. The value of the treatment varies inversely with the duration of the disease and other less easily measured factors of resistance and hidden sepsis. Relapse is not uncommon, and some writers reserve the method for patients whose general condition is good.

Diet and Drugs.

Diet is a very important part of the treatment of chronic arthritis. Under-nourished patients with atrophic rheumatoid arthritis of the Poncet type should take a full and generous diet, rich in animal fat, and similar to that used in tuberculosis. The correction of their hypochlorhydria is desirable to this end. On the other hand, for over-weight patients with menopausal arthritis, stout patients with osteo-arthritis or gout, and indeed for most osteo-arthritics, a reducing diet (low caloric feeding) is indicated.

DIFFERENTIAL DIAGNOSIS OF ARTHRITIS.

—	Rheumatoid arthritis.	Osteo-arthritis.	Climacteric arthritis.	Gout.
Usual mode of onset	Sometimes acute; often with a febrile attack of some length.	Insidious afebrile.	Insidious afebrile.	Acute febrile.
Usual age of onset	25–40.	40–55.	45–55.	35–50.
Sex incidence	At least three times as common in females.	Approximately equal.	Females.	30 to 50 times as common in males.
Bilateral symmetry	Usually more or less bilaterally symmetrical.	Often asymmetrical.	Usually both sides.	Usually asymmetrical.
Initial changes	At first periarticular, accompanied by much fibrositis.	Chiefly endarticular at first.	At first confined to synovial membrane.	At first confined to articular cartilages.
Movement	Early considerable limitation.	Apart from sudden "locking" little interference with movement.	Not marked at first.	Little limitation after recovery from acute attack in early stage.
Wasting of limbs	Early and marked.	Only in late stages, then little.	Only in late stages.	Only in late stages.
Joints first affected	Smaller joints first affected; usually first and second phalangeal.	Larger joints affected first; most frequently commences in one knee.	Almost always the knees are affected first.	Almost always metatarso-phalangeal articulation; great toe affected first.
Appearance of swelling of joints	Fusiform.	Gnarled irregular.	Fusiform.	Irregular.
Ankylosis	Fibrous or bony common.	Rare.	Rare.	Rare.
"Jaw-neck" syndrome	Often present at early stage.	Absent.	Absent.	Absent.
Radiograph—				
(1) Early	(1) No bony or cartilaginous change.	(1) Slight lipping.	(1) No bony change.	
(2) Late	(2) Diminished density of bones; outline fairly regular.	(2) Hyperostosis; outline of ends irregular; osteophytes; narrowed articular cartilage; space.	(2) Osteophytes in about 25 per cent.	(2) Somewhat resembles osteo-arthritis, deposits of sodium urate seen as light spots.
Patient's general condition	Thin, pale, waxy; looks ill and toxic.	Often hale and well-nourished.	Usually overweight; loss of muscle tone; "girdle-obesity."	Florid, usually over weight, often tophi.
Blood picture	Slight anæmia; leucocytosis; relative lymphocytosis: low suspension stability.	No anæmia; marked leucocytosis; suspension stability less lowered.	Usually no anæmia.	No anæmia; moderate leucocytosis during attack; marked increase in sinking rate during the attack; normal in intervals.
Achlorhydria	Frequent.	Absent.	Absent.	Absent.
Basal metabolism	Often lowered.	Generally normal.	Often lowered.	Usually normal.
Blood uric acid	Generally normal.	Often high.	—	High.

A. G. Watson makes the useful suggestion that if dessert be served at the beginning of meals rather than the end it reduces the total intake of food.

Small doses of thyroid extract are undoubtedly often effective in menopausal arthritis, and apparently mixed glandular extracts may have some tonic effect in other forms of the disease. Intestinal antiseptics —guaiacol carbonate, guaiacum and sulphur, dimol, and colloidal iodine—are often used with advantage. Patients with rheumatoid arthritis and hypochlorhydria should be given dilute hydrochloric acid, ℥20, well diluted after food. Arsenic, iodine, and potassium iodine may be useful. Liquid paraffin combined with agar may be used to improve the action of the bowels.

Physical Treatment.

Once the focus of infection has been dealt with the object of subsequent treatment must be to stimulate the defensive mechanism of the body. Vaccines or non-specific proteins will produce hyperæmia, inflammation, and fever, and physical methods, especially heat, are capable of the same effect. To heat the actual part or joint there is the choice of diathermy, local mud and peat packs, immersion of limb in molten paraffin wax, radiant heat, hot water, hot water vapour, or hot sand. Physical therapy also includes

massage and manipulation and various forms of local treatment.

Balneotherapy.—Water may have various important reactions upon the body—mechanically by its invaluable support in exercising stiff and wasted muscles; by the stimulus of its impact, as in douches or whirlpool baths, or by an action attributable to substances which it holds in solution or suspension, salt, sulphur, CO_2. But its main therapeutic effects in chronic arthritis are those which depend upon its temperature. Hot baths, like protein shock, have a local reaction and a general reaction. The local reaction is a hyperæmia, whilst the general reaction is a rise in the temperature of the skin, an increase in the peripheral circulation, owing to enlargement of the calibre of the surface blood-vessels, and a quickening of metabolism. Many patients cannot take general baths, and are sufficiently treated by local heat and manipulation. Heat applied to a limb as in the whirlpool bath, at 45° C., very greatly increases the local circulation, and the blood capillaries may be so dilated that the venous blood becomes arterial in character. The application of cold following the application of heat (thermal contrast) is another method of stimulating reabsorption of arthritic exudates.

Balneotherapy is of great service in almost all forms of chronic arthritis for the following purposes:—

1. For stimulating the immunising mechanism and for aiding the absorption of inflammatory products—action resembling to some extent that of protein shock.
2. For the restoration of the cutaneous reaction, and for promoting elimination through the skin (diaphoresis), and in through the kidneys (diuresis).
3. For the relief of pain.
4. For aiding (by the relief of muscular spasm and by obviating gravity) the re-education of function in joints and muscles stiffened or deformed by previous inflammation.

The second of these functions—the restoration of cutaneous reaction—is of great importance.

A healthy skin has many functions besides its protective action. By the ingenious mechanism of its capillary circulation (in which it is said one-third of the blood can be accommodated when fully dilated) it is the principal organ for regulating temperature, and for the conservation or loss of heat; it is an important agent in elimination of waste and toxic substances, and, in addition, recent work has made it appear in the new light of a great gland with an internal as well as an external secretion. The skin has a hard time in civilised life, and in patients with rheumatoid arthritis obvious signs of defective skin action are seen; beauty is lost, the skin is pale, sallow (or even pigmented) and unattractive, the mechanism of heat regulation seems jammed on the "off" side (to borrow a railway carriage metaphor), the surface temperature is low, the skin feels cold, and unnatural sweat comes from palms and soles. The patient has lost the glow of health and feels miserably cold with the shiveriness of toxæmia. Balneotherapy attempts to encourage and re-educate the patient's skin back to the "full flush" of health.

Balneotherapy is rather an art than a science, and it is almost impossible to give precise indications for its use. In general, however, baths and other forms of physical treatment are contra-indicated in the active febrile stages of any arthritis, whilst if a patient has a removable focus of infection it is bad practice to commence balneotherapy or physical treatment before that focus be removed, save only perhaps for the relief of pain, and in certain somewhat rare cases where it is judged that the patient's resistance has been so lowered that physical treatment should come first, with a view to increasing the resistance sufficiently to allow the focus to be safely removed. Two or more forms of physical treatment administered together are more likely to do good than if they are given separately.

Diathermy is a form of heat which is of great service, and is increasingly applied both to the joints themselves and in treating foci of infection.

Facilities for Treatment.

Hydrological methods have their best hope of success when the patient can devote his whole time to the treatment in favourable surroundings—e.g., at a spa—with the advantages of change of air and regimen, and sometimes with the additional assistance to be obtained from natural mineral waters. Many forms of hydrological treatment can, however, be given with great benefit to patients using ordinary waters at hospitals other than those at the spas, and at out-patient clinics. Their employment requires special experience, a specially trained staff, and suitable equipment.

The report concludes, after references to surgical measures, with a section on the facilities for treating adult rheumatic disorders in this country, including a brief account of the spa hospitals. The need for further provision is emphasised, and recommendations are made concerning the establishment of physical treatment centres and "arthritis units." An appendix on the treatment of rheumatism by physical methods in Germany is contributed by Dr. Fortescue Fox and Dr. Margarethe Mautner.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Local Appointments.

THE medical profession in the Irish Free State is much interested in the Local Authorities (Officers and Employees) Bill introduced to the Dail last week by Mr. de Valera. The object of the Bill is to amend the Local Authorities (Officers and Employees) Act of 1926 in one particular. That Act provided that appointments under local authorities should be made on the nomination of a central board set up by the Government, the Local Appointments Board, only one nomination being made in each case. Mr. de Valera proposes that instead of naming one person to be appointed the Board should submit a panel of names from which the local authority should choose one. His argument was that the local authority should not be deprived of all power of choice in the selection of their officers. In opposing the Bill Mr. W. Cosgrave, President of the Executive Council, said that the Act had been introduced for one main purpose—to secure in the appointment the best qualified persons. Under the Bill now before the House local authorities were to be invited to ask for a panel of not less than three. This would mean that canvassing and local influence would be resurrected. The purpose of sending down more than one name could only be to invite the local authorities to appoint someone other than the best qualified candidate. He further stated that the standard of applicants for the various posts had been good. Mr. T. J. O'Connell, the leader of the Labour Party, also opposed the Bill. He said that appointments, whether made under the central government or under local authorities, and the method of making them, should be above party. He asked that there should be an inquiry into the working of the original Act, subsequent to which there might be, if necessary, agreed legislation. Mr. E. Blythe, Minister for Finance, agreed that an inquiry into the working of the Act might be extremely useful. One of the results of the present system was that there had been great numbers of candidates coming forward, which showed that they had confidence in the methods by which they could be appointed. He saw no reason why officials should be chosen by a local authority which they had to serve under, just as he saw no reason why civil servants should be chosen by a Minister, because officials were no more the servants of council or local authority than civil servants were the servants of the Minister. Dr. T. Hennessy said that before the passing of the Act it often happened that a candidate—a medical candidate—passed his final examination one day, had his degree conferred, and then went down the day afterwards and got elected to a position. Professional experience had mattered little so long as he had influential friends enough on the local board. Dr. Ward said that the corruption practised by public bodies in the

country had been put to shame by the corruption practised at headquarters. The difference was that when there was a big case of corruption in the country it was exposed, but the corruption practised at headquarters did not see the light of day. To which Mr. R. Mulcahy, Minister for Local Government and Public Health, replied that if there were details to substantiate the charge that the work of the Local Appointments Commission was tinged with corruption, those details should be given.

Medical opinion in Ireland is strongly against any weakening of the Act of 1926. In the opinion of many that Act was the greatest reform in local administration in the history of the country. It ensured that the appointment of local officials should be made by an independent body, assisted by experts, and thereby it ensured the gradual establishment of an efficient local government service. Medical men realise that appointments are now given on merit and not on grounds of family or political influence, and there is no doubt that the standard of entrants to the public medical service is improving. The only further change desired by medical opinion is one suggested in the debate by Mr. O'Reilly, an Opposition Member, —namely, the conversion of the local government service with a civil service. The medical profession has long been asking for a National Medical Service.

Royal College of Surgeons in Ireland.

The annual election of officers and council of the Royal College of Surgeons in Ireland took place last week. Mr. T. E. Gordon, who has been elected President, is professor of surgery in Trinity College and senior surgeon to the Adelaide Hospital. He served in the war at the "Dublin" (83) Hospital, with the rank of Lieut.-Colonel. Mr. R. A. Stoney, the new Vice-President, is senior surgeon to the Royal City of Dublin Hospital. He served in the war in the French army, with the rank of Médecin Majeur, and is a Chevalier of the Legion of Honour.

"FINCLURE."

"Finclure, Cent. London" is the telegraphic address of the Surgical and Medical Protection Union of London, Ltd., a body which is seeking the support of the medical profession on grounds which are set out in the following circular, placed in our hands by a correspondent:—

May, 1928.

DEAR SIR,—The attention of all Surgical and Medical Practitioners is urgently directed to the great risks which they incur by remaining outside the Union. The number of claims is greatly increasing, and it cannot be too clearly emphasised that any member of these professions who fails to enrol as a subscriber is assuming very serious risks, which no prudent person would accept. The annual subscription is £1 per annum, *and to practitioners who are transferring from another Defence Society, the subscription is* 15*s.*, and will be retained at that sum for at least three years. No entrance fee is payable on admission. The subscription includes an insurance, *unlimited in amount*, and all costs, in cases which may be raised against a Subscriber, in which he may be found liable in damages. In view of the verdicts of juries in such cases as *Harnett* v. *Bond and Adams*, it is essential that full protection should be given against any award which may be made. This Union undertakes to defend their Subscribers against all claims which may be made against them, in respect of their professional work, including liability, not only for the acts of the Subscriber himself, but of all assistants and dispensers in his employment, and of other practitioners acting on his behalf. A separate indemnity contract is delivered to each Subscriber in his own favour.

In addition to the great security which is afforded by joining the Union, various advantages are offered, the particulars of which are attached hereto.

A form of application is sent herewith.

Yours faithfully,
W. FINDLAY,
Secretary and Treasurer.

This circular letter emanates from Atlantic House, 45, Holborn Viaduct, London, E.C., and apparently from a small office on an elevated floor of the building, but there is a second address on the letter, indicating that the Union has a Scottish department located at 86, St. Vincent-street, Glasgow, where the accommodation may be more in keeping with the promises of the secretary and treasurer of the new activity. We do not know if Mr. W. Findlay is or is not the same person who has figured in the "Handbook for Recently Qualified Medical Practitioners" as secretary of the Medical and Dental Defence Union of Scotland, Ltd., 155, St. Vincent-street, Glasgow.

The following are the particulars of the advantages of joining this movement which are set out in the circular:—

1. Subscribers have an unlimited cover for damages which may be awarded, and an individual Indemnity Contract is delivered to each Subscriber when joining.

2. All cases in which the Subscriber is attacked professionally are taken up by the Union and defended, *without any discretionary power to refuse defence.*

3. Special "Surgical and Medical" Insurance Policies can be obtained through the Union for life, personal accident, motor car, sickness, and other risks. Special Insurance arrangements are offered making provision for the Widows and Children of Surgical and Medical Practitioners in the event of death. The Insurance offered is by one of the best Insurance Companies. The terms offered are exceptionally favourable, and, owing to the privileges which a Union is able to obtain, much more advantageous than can be obtained otherwise. These "Surgical and Medical" Policies can only be issued to Subscribers to this Union.

4. Subscribers are entitled to obtain legal advice on all matters relating to their professional work direct from the Solicitors and Counsel, and complete confidentiality is thus secured. Subscribers may rely on the fact that their private affairs on the matters regarding which they desire to be guided will be entirely free from the knowledge of anyone but the Solicitors and Counsel (where the latter require to be employed).

There are also set out in this communicative circular "other facilities available to subscribers," the terms for which can be obtained on application to Mr. Findlay. These include the buying and selling of practices and houses, with arrangement for financial help, the drawing up of agreements for partnerships and assistancies, the preparation of income-tax returns, the audit of professional books, and advice on investments.

Upon the advantages set out above the following comments seem fair:—

(1) An individual indemnity contract is of no use if he who offers it cannot fulfil the terms. (2) Without a discretionary power to refuse defence, Mr. Findlay will be compelled to mediate legally in cases where he will be forced to meet damages and costs in actions which should never have been undertaken—often for professional reasons. (3) The Medical Insurance Agency is already in a position to obtain favourable terms for insurance of all sorts for medical men, while paying substantial sums in support of medical charities. (4) It will be noted that solicitors other than Mr. Findlay are going to give legal advice on the conduct of medical practice with complete confidentiality; is this funny promise a suggestion that solicitors and counsel are going to give their assistance gratuitously, or what is implied by the word "entitled"?

The medical profession may wish to be guided in their decisions as to reply. The title of the new association is very reminiscent of the titles of the two well-known and substantial medical defence societies already discharging with increasing efficiency many of the responsibilities which Mr. Findlay is ready to assume. The offer to do the work of these societies and much more than their work for 15*s.* per annum instead of £1 per annum can only be worth considering if Mr. Findlay can prove the present command of large capital. No directors are mentioned and no trustees, and there is no guarantee that Mr. Findlay possesses any resources from which to meet liabilities rightly described by himself as "unlimited in amount." Thus "the great security . . . afforded by joining the Union" is obviously absent, and we cannot recommend our subscribers either to pay an annual fee of £1 in response to Mr. Findlay's invitation, or to desert either of the well-known medical defence

societies, whose guarantees and financial position are unimpeachable. Mr. Findlay's backing may be of the most substantial character, but before subscriptions are invited the nature of that backing should be disclosed.

Public Health Services.

MENTAL HOSPITAL REPORTS.

THE *Middlesbrough Borough Mental Hospital* housed 459 patients at the end of last year. The recovery-rate for 1927 was 62·2 per cent., the highest that has ever been attained. The death-rate was 8·51 per cent.; of the 40 patients who died 10 were general paralytics. Parole was granted to 50 patients, and 74 per cent. were usefully employed daily. There was rather a high incidence of severe epilepsy—12 per cent., but the tuberculosis-rate was low, 1·96 per cent., and the general health good. Time is beginning to tell on the fabric of the building, and the telephone, fire alarm, and heating system demand renewal. Two nurses obtained their certificate with distinction, and 12 more passed the preliminary examination.

The Report of *The Lawn*, Lincoln, is the last from the pen of Dr. Jean Shortt, whose retirement we recorded early in the year. There were 60 patients under care and 12 in residence on Dec. 31. During 1927 there were 6 deaths, 2 resulting from an influenza epidemic in the spring. Thirteen of the 29 patients admitted during the year came as voluntary boarders. Steady progress is being made in renovating and improving the building. Only one patient is on parole, but 16 walk or drive out attended. The report is illustrated by photographs of the grounds, and the usual statistical tables are appended.

The 114th annual report of the *Glasgow Royal Asylum* contains the abstract of a speech by Prof. J. Glaister at the annual meeting, urging increased study of psychiatry by doctors and nurses, and the Physician-Superintendent's report for 1927. There were 518 patients in the hospital at the end of the year, and over 60 per cent. of the admissions during the preceding 12 months were voluntary. This is a record of which the institution may well be proud. The death-rate was 11·2 per cent., a high figure which was accounted for by an obscure streptococcal epidemic which was reported to the Public Health Department. The operating theatre and dental room are in constant use, and a number of improvements have been effected in the structure of the building. An increase of dietary has been greatly appreciated. Occupational therapy has been considerably developed, and the Instructress presents her first report this year. Rug-making is chiefly favoured by the men patients, and sewing, knitting, and raffia by the women, but many other industries are at work. The visiting commissioner comments on the absence of noisy excitement and of destructive tendencies and depraved habits, and ascribes it to the occupational therapy department. The dentist reports that he saw 269 patients during the year and carried out 245 extractions with local anæsthesia. Very few have refused his services. The Medical Superintendent emphasises the importance of applying psychiatry to the problem of delinquency and of extending the realm of preventive psychiatry.

The *Cumberland and Westmorland Mental Hospital* housed 864 patients at the end of 1927, the number of admissions during the year being considerably below the pre-war average. Most of the patients had a very poor prognosis, reflected in the recovery-rate of 29·8 per cent. The death-rate was 6·9 per cent., and with the exception of tuberculosis and influenza there was no infectious disease. A cinematograph and refrigerating plant have been installed, and the visiting commissioners urge the remodelling of the administrative block. The dentist visits regularly. Only 13 male and 6 female nurses are certificated or registered as mental nurses. The medical superintendent reviews the progress made in the hospital during the last 30 years. The improvements in the building include a new sewage system, verandahs to each sick ward, a recreation hall, and electricity.

The report of the *Cheshire County Mental Hospital* at Parkside records an active year. There were 2394 patients in the institution on Dec. 31st, four over the normal accommodation. The overcrowding is on the male side and no solution of the difficulty has yet been found. The total number of admissions was the smallest on record since 1902, and the decrease is again among men, although the female admissions were also abnormally few. Of the 184 admissions there was no prospect of recovery in 88, so that the recovery-rate of 36·4 per cent.—a record for the hospital—is very creditable. The death-rate was also a record: 5·3 per cent., and autopsies were made on 79 per cent. of cases. The treatment of general paralysis by induced malaria continues to give satisfactory results, and a special report on it is appended. Of the 29 patients treated 7 have been discharged, 7 are dead, and 14 are undergoing remissions. Only 1 discharged patient has returned. Ultra-violet rays have proved so beneficial for mental and physical disorders that two more rooms have been equipped with mercury-vapour lamps. Radiant heat, balneotherapy, and general massage are also used. Endocrine extracts have not yielded any appreciable effects. Two cases of dysentery occurred and there was an epidemic of influenza and some pneumonia. Otherwise the general health maintained a high level. Fifty-four women and 20 men have been employed in handicrafts, and 50 more patients have been induced to take up games. A series of six monthly meetings was arranged during the winter months for medical practitioners in the area from which patients come. The programme was an attractive one, and in this activity Parkhurst sets an example that other institutions might well follow. Short reviews of work on 200 cases of puerperal insanity and on the treatment of insomnia are printed in the report, and show that the research spirit is active. The interesting conclusion of the latter investigation is that a cup of hot cocoa is more effective than nightly hypnotics. Eleven nurses and two attendants obtained their certificate during the year, and, as we have already noted, one member of the nursing staff received the M.B.E.—the first honour conferred on a purely mental-trained nurse.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 2ND, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 286 (last week 258); scarlet fever, 1585; diphtheria, 887; enteric fever, 60; pneumonia, 1182; puerperal fever, 52; puerperal pyrexia, 100; cerebro-spinal fever, 9; acute poliomyelitis, 3; acute polio-encephalitis, 3; encephalitis lethargica, 28; dysentery, 13; ophthalmia neonatorum, 98. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 26 counties: London, 5; Bedford, 1; Buckingham, 5; Chester, 1; Derby, 6; Durham, 62; Gloucester, 1; Hertford, 1; Lancaster, 15; Leicester, 1; Lincoln, parts of Holland, 7; parts of Kesteven, 1; parts of Lindsey, 2; Middlesex, 3; Norfolk, 8; Northumberland, 15; Nottingham, 9; Oxford, 1; Stafford, 31; Warwick, 2; Yorks North Riding, 6; West Riding, 59; City of York, 2; Brecknock, 3; Glamorgan, 17; Monmouth, 22.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on June 5th-6th was as follows: Small-pox, 33 under treatment, 8 under observation, scarlet fever, 1702; diphtheria, 2049; enteric fever, 31; measles, 906; whooping-cough, 153; puerperal fever, 18 (plus 18 babies); encephalitis lethargica, 69; poliomyelitis, 1; "other diseases," 25. At St. Margaret's Hospital there were 14 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns including London, there was no death from small-pox, 6 (0) from

enteric fever, 56 (24) from measles, 7 (1) from scarlet fever, 39 (6) from whooping-cough, 34 (8) from diphtheria, 38 (8) from diarrhœa and enteritis under two years, and 46 (8) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever outside London occurred at Ealing 2, Portsmouth 1, Southampton 1, Norwich 1, and Bath 1. Of the 32 fatal cases of measles outside London, 8 were reported from Liverpool and 3 each from West Ham, Ipswich, and Birmingham. Of the 33 fatal cases of whooping-cough outside London, 5 were reported from Birmingham, and 3 each from West Ham, Liverpool, and Gateshead; while Glasgow showed 9 deaths for the same week.

The number of stillbirths registered during the week was 273 in the great towns (corresponding to a rate of 44 per thousand live births) including 48 in London.

Correspondence.

"Audi alteram partem."

THE WAR EMERGENCY FUND.

To the Editor of THE LANCET.

SIR,—The activities of the committee of this Fund have now come to an end. The first case of distress was relieved in 1915 by the Royal Medical Benevolent Fund, but it was soon found that a special sub-committee—the War Emergency Fund Committee—had to be constituted, and that an appeal for larger funds was necessary. The War Emergency Fund was instituted to afford assistance to those members of the profession who, in consequence of having joined the medical service of the Navy or Army, found themselves in temporary financial difficulties. The late Sir Alfred Pearce-Gould, who died in 1922, was the first chairman. Amongst those who served on the committee were: Sir William Lister, Mr. F. P. Legg, Dr. Andrew Elliott, Sir D'Arcy Power, Dr. Charles Buttar, Sir William Willcox, Sir Charters Symonds (hon. treas.), and Dr. Newton Pitt (hon. sec.).

Applications for assistance were received from 297 medical men; of these 160 cases were relieved, and the other 137 cases were either ineligible or were assisted in other ways to secure the help they required. From 1920 most of the applications made were for assistance towards educational expenses. Assistance for education has been given to 75 boys and 30 girls, who have attended the following schools:—

Taunton, Bournemouth, Cranwell, Harlow, Nottingham, Tunbridge Wells, City of Oxford School, Westminster, Durham, Malvern, Wellingborough, Southbourne, Edinburgh, Bromsgrove, Purley, Hunstanton, Woolwich, Epsom, Kelly, St. Paul's, Colet Court, Tonbridge, France, Denstone, Cardinal Vaughan's School, St. Peter's York, Sunderland, Ampleforth, Malton, Wimborne, Blackheath, St. Anne's, Holt, Bedford Training College, Bury, Alderley Edge, Froebel, Little-hampton, University College, St. Bart.'s, St. Mary's, and Guy's.

Grants have also been made towards insurance, rent, maintenance, debts, surgery requisites, help towards the purchase of practices, examination fees, and the like. The total sum paid in aid of education of the children of these medical men was £18,946 9*s.* 10*d.* The total sum raised was £32,458 16*s.* 8*d.* The grants given in successive years were:—

	£	*s.*	*d.*		£	*s.*	*d.*
1917	290	4	0	1924	2,470	17	0
1918	697	16	2	1925	1,778	4	2
1919	7,552	15	2	1926	291	4	4
1920	5,926	17	6	1927	85	0	0
1921	5,622	14	5				
1922	6,204	17	9		£34,876	14	11
1923	3,956	4	5				

This letter is not written primarily to acquaint the profession of the way in which the fund has been administered, but to tell the story of the wonderful, long-continued, unobstrusive, self-sacrificing, labours of two members of the committee who investigated, visited, interviewed, and corresponded with applicants for grants. Their recommendations were almost invariably accepted by the committee, and without their aid and advice the Fund could not have functioned without making many mistakes. These facts, we think, should be known.

The whole profession will be proud to learn of the splendid selfless service to their comrades in distress rendered by Sir Charters Symonds and Dr. Newton Pitt.

We are, Sir, yours faithfully,

THOMAS BARLOW,
President of the Royal Medical Benevolent Fund.
CHARLES BALLANCE,
Chairman, War Emergency Fund Committee.

June 6th, 1928.

PROPHYLAXIS OF RICKETS.

To the Editor of THE LANCET.

SIR,—Dr. Helen Mackay's useful advice on the prophylactic treatment of rickets (THE LANCET, May 5th, p. 923) concerns only the treatment of the child, and I would like to draw attention to another way of preventing this common disease—namely, by the administration of cod-liver oil or some other anti-rachitic preparation to the pregnant woman and to the mother during lactation. The question whether this is rational has already been considered by A. F. Hess and Mildred Weinstock.[1] They administered cod-liver oil to expectant mothers in the last months before delivery and also fed pregnant rats on it and came to the following conclusion:—

"Judging from our experiments, it would seem that rickets cannot be prevented by improving the diet of the mother, (*a*) previous to pregnancy, (*b*) during pregnancy, and (*c*) throughout lactation, although it can be mitigated to a certain degree. Supplementing the diet of the mother for two generations also failed to render the young refractory. Infants were not protected by giving the mother cod-liver oil during the last two months of pregnancy. On the other hand, the fact that premature infants are markedly susceptible to rickets shows that prenatal nutrition does play a rôle. A consideration of the experimental evidence, of clinical tests, of the susceptibility of bottle-fed compared to breast-fed babies, and the striking seasonal incidence leads to the conclusion that rickets is mainly of postnatal origin. Although its incidence and severity may be influenced by improving the nutrition of the mother, our main efforts should be directed toward improving the environment and nutrition of the infant. Until these postnatal factors are corrected, we cannot hope to prevent rickets."

Little effect though Hess and Weinstock expect from the administration of cod-liver oil to women during pregnancy and lactation, yet they do not deny that, in this way, some result may be attained, and it is quite possible that the benefit would have been greater if the doses given had been larger, for here the coefficient of division (Verteilungs-coefficient) has to be taken into account, which is unfavourable for the small bodies of the fœtus and the suckling. Even less effect may perhaps be expected from the administration of cod-liver oil during lactation, it being generally accepted that mother's milk is poor in vitamin D. But may not the explanation of this be that the mother has not much of this vitamin to give? The unhygienic circumstances of life of most mothers render this supposition acceptable.

I will explain what led me to think of preventing rickets by improving the diet of the mother. For reasons of economy I had started giving the rats in our breeding-house cod-liver oil, of which we had a large supply in store, instead of butter which is more expensive. The females got 1·5 or 2 g. a week, which was a substantial dose. From the moment I took this measure all my efforts to produce rickets in their young remained fruitless, though I had never failed before. To find out the cause of this unexpected and extremely awkward result I carefully examined the material of the rickets-producing diets to find out the composition and the ratio of calcium

[1] Amer. Jour. Dis. Childr., 1924, xxvii, 1; Jour. Amer. Med. Assoc., 1924, lxxxiii., 1558.

to phosphorus, but found no deviation from the diet prescribed. None of the well-known diets (McCollum's with both hard and soft wheat, Steenbock's and Sherman's) had any effect, so nothing was left but to consider the cod-liver oil as the cause of the failure. Cod-liver oil was banned from this moment, but this measure had not immediately the desired effect, *for rats born even five months afterwards still proved refractory to rickets.* Consequently I was obliged to get rats from other breeding-pens in whose young I at once succeeded in producing rickets.[2]

I cannot put this method of preventing rickets by the administration of cod-liver oil to the test and must confine myself to suggesting it to others who can. It is true that we have effective remedies for rickets, but any one who has treated children for this disease will have found that it is sometimes long before they are cured. So here, too, prevention is better than cure. If prenatal administration of cod-liver oil should prove effective, there would be one way more, and that an easy one, to prevent the very common and by no means small evil of rickets.

I am, Sir, yours faithfully,

E. C. VAN LEERSUM.

Netherlands Institute of Nutrition, Amsterdam,
May 24th, 1928.

AN INQUIRY INTO THE ÆTIOLOGY OF CANCER.

To the Editor of THE LANCET.

SIR,—May I ask those of your readers who are engaged in general practice and who would be willing to answer a series of questions relating to cancer cases to send their names to this laboratory. All that is necessary at the moment is to put a visiting-card into an envelope or write name and address on a post-card and forward it to me at the Department of Applied Statistics, University College, London, W.C.1.

The object of the inquiry will be to try to throw some light on the vexed question of cancer ætiology, and this will necessitate information relating to a large number of cases from all parts of the country which cannot be obtained in any other way. The identity of the cases need not be revealed, and the forms will be so devised that scarcely any writing is required. Such appeals have sometimes met with a disappointing response in the past, and it is therefore not proposed to proceed with the investigation unless a sufficient number of helpers is first assured.

May I suggest that before deciding that the rendering of such a service is impossible or that it will only be a waste of time, the last paragraph of the article on p. 1243 of this issue of THE LANCET may be read.

I am, Sir, yours faithfully,

PERCY STOCKS,
Reader in Medical Statistics.

Galton Laboratory, University College,
London, W.C., May 28th, 1928.

"ENCEPHALOMYELITIS FOLLOWING VACCINATION."

To the Editor of THE LANCET.

SIR,—We have no desire to intervene in the discussion in your columns concerning the appropriate terminology to be applied to the pathological lesions in post-vaccinal encephalitis. But Dr. Perdrau in his reply to Prof. Turnbull and Prof. McIntosh has raised a further question which seems to us of much greater importance. He appears to take the view that acute disseminated encephalomyelitis is a pathological entity which may be associated with acute infections, such as vaccinia, or may occur without any obvious antecedent, and that pathologically the lesions in acute disseminated encephalomyelitis and post-vaccinal encephalitis are indistinguishable. We think it of interest, therefore, to record that we have, during the last two months, observed six cases of acute meningo-encephalomyelitis which differed clinically in many respects from acute epidemic encephalitis lethargica and showed a marked clinical similarity to post-vaccinal encephalitis, though none had recently been vaccinated. The ages of our patients ranged from 3 to 18 years. The onset of the illness was acute, with considerable pyrexia, drowsiness, and delirium. Cervical rigidity and Kernig's sign were present in four cases, and trismus in one. Ocular abnormalities were slight or absent. Aphasia was noted in two cases, quadriplegia in one, hemiparesis in one, and in one the principal signs were those of a myelitis. The cerebro-spinal fluid showed no gross abnormality. One patient died, one is left six weeks after the onset with total aphasia, apraxia, and weakness, and spasticity of both upper limbs, and the others have made, or are in process of making, a complete recovery. The occurrence of six cases in less than two months suggests the presence of a small epidemic. We hope to report these cases fully in a short time, when we are able to include Prof. Turnbull's report of his pathological examination on the fatal case, and Dr. S. P. Bedson's report on the results of his attempted transmission of the disease to animals. We propose in our further communication to deal with the relationship of this condition to other forms of encephalitis.

We are, Sir, yours faithfully,

DONALD HUNTER.
W. RUSSELL BRAIN.

London Hospital, E., June 8th, 1928.

MARVELLOUS MONTPELLIER MIDWIFERY.

To the Editor of THE LANCET.

SIR,—A few weeks ago I received, from a photographer's shop in Montpellier, a picture post-card containing a photograph of Prof. Delmas, of Montpellier, "ganté" but not "coiffé" (as were the midwives behind him), together with a printed notice of the professor as the author of the procedure of "extemporaneous evacuation of the uterus (delivery at a fixed hour)," and an account of this "accouchement indolore et sur rendezvous" (painless delivery by appointment).

This method consists in digital and manual dilatation of the cervix under spinal anæsthesia, the dilatation being produced, on an average, in three minutes; the child is then delivered by version or forceps, and three minutes later the placenta follows spontaneously, the whole labour being over in a quarter of an hour, "the infant in its cradle, the placenta in its dish, and the mother back in bed."

As a picture post-card is not the usual medium for the communication of medical information, I waited for the official account of Prof. Delmas's paper, which appears in the *Bull. de la Soc. d'Obs. et de Gyn. de Paris* for April, 1928. The spinal anæsthesia is produced by the injection of 10 cg. of sterile seurocain dissolved in 5 c.cm. of cerebro-spinal fluid. Amongst the 40 cases with which the paper deals, the author states "je n'ai eu que des cas heureux": one woman, however, died from acute anæmia and syncope (central placenta prævia). The child "if it had not succumbed before the extraction"—the author omits to state how many of these occurred—"was always preserved alive." The dilatation took 12 minutes in one case, 20 seconds in several cases, three minutes being the average. Prof. Delmas insists on the importance of limiting the procedure to cases where the cervix is healthy and not affected with cicatrices or new growth, and of its being carried out by specialists; and he admits that the procedure is too recent to be vulgarised—no indication of this appears in the picture post-card.

In the discussion which followed the paper there was agreement as to the rapidity with which dilatation could be carried out under spinal anæsthesia, opinions differing as to whether the latter facilitated version

[2] A more extensive report on this work was published in the Nederlandsch Tijdschrift voor Geneeskunde, 1928, lxxii., 680.

M. Forgue alluded to the risk accompanying spinal anæsthesia. M. de Rouville admitted that the operation could be done *cito et jucunde* ; but, as to *tuto*, " n'allons pas si vite et attendons." M. de Carrera had failed to turn a child after dilatating the cervix, and said he would never think of performing the operation in a normal labour, on account of the risk to the mother from the anæsthesia and intrauterine manipulations, and to the child from extraction by the feet.

Prof. Delmas's paper would have been more valuable if he had published all his cases and had stated how many children died. He gives particulars of 11 cases, of which only two were primiparæ ; in one of these the cervix could not be dilated and vaginal Cæsarean section was done ; in the other the dilation took 7 minutes, version and extraction 11 minutes. No injury was done to the soft parts, which is remarkable in a primipara of 19 whose child weighed 8¼ lb.

What of the children ? In 10 out of 11 the child was born " astonished " (étonné) and had to be revived ; one survived for 48 hours only ; the remaining child cried at once. Opinions will differ as to the cause of the child's " astonishment " ; M. de Rouville suggested that it was due to the brusque and involuntary capers it had cut in coming into the world. Personally, I was astonished, more than 40 years ago, at the frequency of visceral hæmorrhages in the child delivered by version and extraction,[1] and I cannot suppose that it was the perfection and harmlessness of Prof. Delmas's technique which caused the ten children to be " astonished," or the complete dilatation of the soft parts which caused the one child to cry out at once. Let us remember what that old Montpellier doctor François Rabelais tells us about the birth of Gargantua " in a strange manner," when an ugly old trot who had the reputation of an expert she-physician made Gargamelle so horrible a restrictive and binding medicine that the child, finding the passages obstructed below, sprang up and leaped, entered the hollow vein and issued forth at her left ear. As soon as he was born he cried, not as other babes used to do—miez, miez, miez, miez, but with a high, sturdy, and big voice, " Some drink, some drink, some drink," as inviting all the world to drink with him. " I doubt not," says Rabelais, " that you do not thoroughly believe the truth of this strange nativity. Though you believe it not, I care not much ; but an honest man, and of good judgment, believeth still what is told him, and that which he finds written."

I am, Sir, yours faithfully,

London, June 2nd, 1928. HERBERT R. SPENCER.

THE PROBLEM OF ANKYLOSTOMIASIS.

To the Editor of THE LANCET.

SIR,—In your editorial note to Colonel Clayton Lane's letter in THE LANCET of May 19th (p.1043) you commented on the advantage of possessing a summary of the problem of ankylostomiasis. Allow me, therefore, to draw your attention to a fairly recent publication edited by the Rockefeller Foundation in 1922 (Publication No. 11 of the Rockefeller Foundation International Health Board, New York City, 1922, pp. 416) and an article from the Encyclopædia, entitled Occupation and Health (No. 25) in course of publication by the International Labour Office, which in a 12-page summary gives a fairly complete account of the different aspects of this problem. You will see that on p. 11, col. 2, disinfection of mines by salt is briefly discussed.

I am, Sir, yours faithfully,

League of Nations: International Labour Office, Geneva, June 6th, 1928. L. CAROZZI.

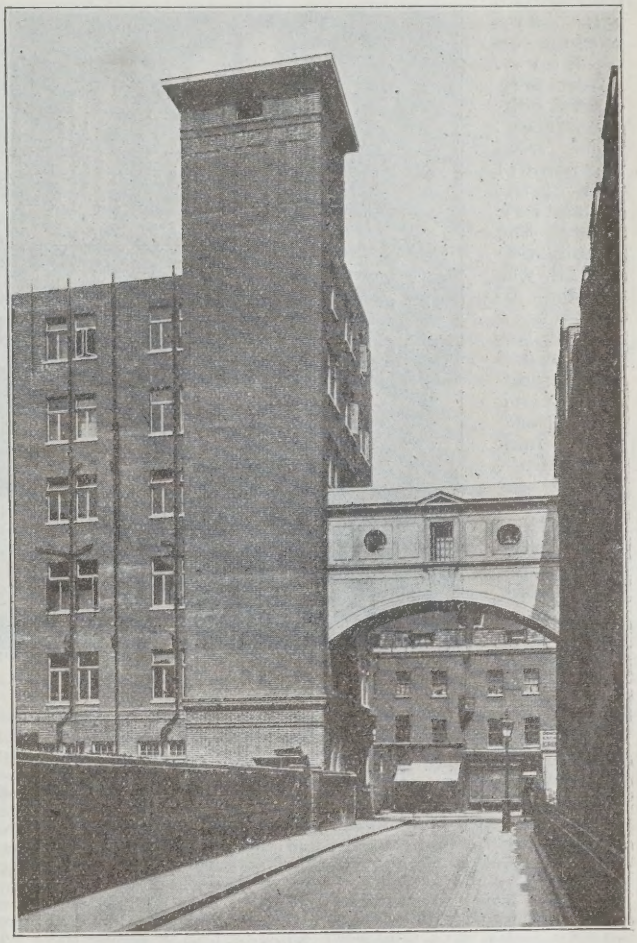
[1] Obs. Trans., 1893, xxxiii., 203.

BIRMINGHAM CRIPPLES' HOSPITAL.—The Woodlands Hospital at Northfields is about to be enlarged at a cost of £25,000. It is intended to concentrate at Woodlands all the in-patient works of the Birmingham Cripples' Hospital.

NEW BIOCHEMICAL INSTITUTE IN LONDON.

ADDITIONS TO THE MIDDLESEX HOSPITAL.

THE new building opened at the Middlesex Hospital yesterday (June 14th) really consists of two portions. The first—the basement, sub-basement, and ground-floor—is given over to hospital uses ; the sub-basement contains the central boiler house and engineering plant for the hospital and all associated buildings, the basement includes the connecting corridors and subways to the hospital, annexe and nurses' home, whilst the ground floor provides a much-needed restaurant for the students. The second portion, from the first floor upwards, is the Courtauld Institute of Biochemistry. The space available for this Institute was clearly defined by the boiler-house site. It was ascertained that it would be possible to erect a building of five storeys above the restaurant and the problem facing those responsible for the laying out of this space was a very difficult one.



The Courtauld Institute of Biochemistry, Middlesex Hospital.

A detailed tour of the principal biochemical departments of the United Kingdom, together with a careful study of the plans of some of the better-known American institutions, showed that almost all existing buildings devoted to this type of work were split up into a large number of small rooms. There are many apparent advantages in this type of construction ; it is possible to give every individual worker a room to himself and to segregate the various research problems to separate laboratories. But

experience has shown that certain disadvantages must be set against these obvious advantages. From the building point of view the number of partitions increases the complications with regard to pipe runs, &c., besides augmenting the cost very considerably. Moreover, the ventilation of a number of small rooms is usually very poor, and there can be no doubt that good ventilation is as important to the workers as is good apparatus and equipment. From the academic point of view, yet further disadvantages are apparent. A small number of separate rooms devoted to individual biochemical problems tends to divide up the whole subject into a series of water-tight compartments. By this system a man working on one problem may be deprived of the healthy scepticism and criticism of colleagues who are working on others. After very careful consideration, both from the point of view of the building and of the administration, it was decided to adopt a more or less new principle in constructing the Institute. Small rooms, except for very special purposes such as incubation and dark rooms, have been avoided, and a series of large, fully equipped laboratories have been built instead. In these big rooms a series of workers are investigating different problems, and it is hoped that with the abolition of physical partitions the mental barriers will also disappear.

Part of one of the New Laboratories.

The first floor is planned as one large laboratory for students, with a preparation room and store. The second floor contains a clinical routine laboratory with three examining rooms attached. The secretary's office is on this floor, near the staircase and lift. This floor is also connected to the Bland-Sutton Institute on the hospital site by means of a reinforced concrete bridge across the street. The third floor contains a large chemical laboratory with combustion and balance rooms, and at the end a large-scale preparation room. The fourth floor is planned to provide a library, optical dark room, standardisation laboratory, and the professor's private room and laboratory. The fifth floor allows for some extension as to half the area, the remaining portion being divided into two large animal houses, with a small incinerator room attached. Two electric push-button lifts are provided—one in the main staircase for passengers, and one for goods and food in the escape stairs. Both serve all floors.

To overcome the difficulty of providing a space in the floor for all the drainage from the benches, the constructional floor slab was placed at the bottom of the main steel beams, the space above and between the beams being used for all pipe ducts. A further advantage gained by this means of construction was flatness of ceilings everywhere. The heating is by low-pressure hot water, the pipes running round the various rooms about 2 ft. below ceiling level. Some rooms, such as the animal houses, are heated by steam. The overhead pipe system was adopted, after considerable discussion, as it was practically impossible to find suitable positions for radiators, owing to the benches and other obstacles. The laboratories are fitted up very carefully, every bench and its detailed fittings having had minute consideration. All services, such as hot water, cold water (both tank supply and high pressure), gas, steam, electric light and power, are provided wherever required.

The all-important problem of drainage from the various benches and isolated sinks was considered in great detail, and many other large laboratories were visited to see the different types in use. The methods finally adopted were governed by two important considerations: (1) The possible deterioration, through chemical action, of the material employed, and disturbance of jointing by vibration and use; (2) the necessity to prevent as far as possible any trouble from fouled waste ducts in the rooms or the building itself.

It was decided to use chemically pure lead in the form of pipes. These were laid in one piece from end to end, with all joints carefully welded. The pipes were laid to a gentle fall in shallow concrete channels, lined with asphalte, as an additional safeguard against possible leakage. These asphalte channels have an iron sleeve protruding through the external wall, to act, first, as a warning pipe, should a leakage occur, and, secondly, to form a way through which the main waste pipe goes to connect up with the main iron stack pipes. Careful arrangements are made to keep these main stacks fully ventilated and easy of access at each connexion. The horizontal lengths of pipe under the floors are reduced to a minimum. Wherever possible they are arranged under the benches themselves and well above floor level, thus making them easy of access.

The prevention of fouling is ensured by introducing laboratory traps to every isolated sink or group of sinks on each bench, thus forming an effectual barrier, and at the same time intercepting all discharges and helping to break down strong mixtures before they find their way to the lead pipe work. All soil drainage is taken separately to main external stacks.

The arrangements in the two animal houses were given special consideration. The floor is asphalte, walls distempered, and all cage racks are suspended from the ceilings. This makes the cleaning of the floors a simple matter and also helps to prevent vermin from getting to the animals. All the laboratories have white glazed brick walls, casement windows with opening fanlights, and deal floors on wood joists. Some of the smaller rooms have either a granolithic or an asphalte-finished floor. All the woodwork is stained and dull varnished. Generally, everything has been kept as simple as possible.

The new Institute will be in the charge of Dr. E. C. Dodds, Professor of Biochemistry in the University of London.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Petition against Vivisection.

On June 6th Lieut.-Commander Kenworthy presented a petition in the House of Commons, signed on behalf of 26,031 persons, praying the House of Commons to "prohibit by law the cruel practice of experiments on living animals."

Rating and Valuation Bill.

In the House of Commons on June 7th this Bill was read a second time and committed to a Committee of the whole House.

Scottish Board of Health.

On Monday, June 11th, the House of Commons went into Committee of Supply on a vote of £2,037,515 for the salaries and expenses of the Scottish Board of Health. Mr. James Hope, Chairman of Committees, was in the chair.

Slum Clearances.

Mr. Ernest Brown raised the question of slum clearances, which he said was one of the first political problems of the day. If they were going to understand the size of the problem they must decide how many people they intended to live in a room and how many families in a dwelling. The preliminary figures recently given to the Edinburgh City Council showed that there were 5000 houses in Edinburgh alone which should be marked down as unfit for human habitation. He welcomed the fact that this year 21,660 houses had been built as compared with 14,930 in 1926, and also the prophecy that next year it was hoped to exceed the 20,000 mark. With regard to slum clearance, however, they had not begun to touch the real problem in Scotland.

Mr. Stewart said that in Glasgow to-day there were 6000 people suffering from tuberculosis. Of those suffering from this disease who were living in one-apartment houses, only 57 had a room to themselves; 145 had a bed to themselves, though living in the same apartment with others; and 976 were sleeping in a bed with other people. In two-apartment houses the story was the same. There were 441 with a room to themselves and 2506 sleeping in beds with others. Out of a total of 3415, fewer than 1000 had either a bed or a room to themselves. Could one wonder that tuberculosis still persisted? To-day in Glasgow they were facing the erection of another sanatorium for 400 patients which before it was finished would have cost something approaching £500,000. To provide a separate bed for over 5000 consumptive patients would require an annual addition of 1360 houses. Surely the Government could do something to give the local health authority the power to provide sleeping accommodation for these people and to provide a separate room for a person suffering from this disease.

An Efficient Medical Service.

Mr. Macpherson said that one of the very best instruments that had ever been introduced into the medical service of any country was the Highlands and Islands Medical Service in Scotland; but the amount annually allocated for that service was only £42,000. The very special work which this service performed could not be done for £42,000 a year. He believed that about £60,000 a year was actually spent on the service. What did the Government intend to do to keep this fund solvent? The Northern Infirmary at Inverness badly needed help in order that recent appliances of science of medicine and of surgery could be procured and that the infirmary should be properly equipped and maintained. A permanent grant from the Board of Health, from the Government, or from the Highlands and Islands Medical Service Fund was urgently needed for this purpose.

Tuberculosis.—Venereal Diseases.

Dr. Drummond Shiels praised the report of the Scottish Board of Health and paid a tribute to the valuable work that had been done in connexion with it by Sir Leslie Mackenzie, who had just retired. It was a matter for regret that the progressive fall in the death-rate from tuberculosis was not maintained during the last year, but probably the reason given—the very severe climatic conditions in Scotland last year—might be part of the explanation. In Scotland many cases in an infectious stage of the disease were living in crowded homes, so that public money spent in other efforts to get rid of this disease was being wasted. He urged that continued attention with the object of securing a pure milk-supply was of great importance in combating the non-pulmonary forms of tuberculosis. He was glad that the report called attention to the very serious position in regard to tuberculosis in the Highlands and Islands of Scotland as compared with the rest of Scotland. In his view, the major causes of this contrast were (1) the very bad housing conditions in the Highlands and Islands, (2) the unsatisfactory feeding of some of the people who lived there, as they were not in a position to resist disease. He would like to have said something about the Hairmyres Colony and of that method of dealing with certain types of tuberculosis. There was no doubt that such a labour colony was on right lines. The Middle Ward District of Lanarkshire and the Board of Health were to be congratulated on coöperating in this effort to deal with tuberculosis on up-to-date lines.

The references to venereal disease in the report dealt with the general propaganda methods which were undertaken with the encouragement of the Board of Health and also with the possibility of preventive methods. They said in regard to those that certain preventive methods might be contributory to the spread of the disease. He (Dr. Shiels) thought he had heard an echo of that in other quarters. It was not the opinion of the Army and the Navy, which had reduced their figures in connexion with these diseases by the methods which were so sceptically referred to in the report. The Trevethin Committee also favoured them. He was interested to find that the Board came to the conclusion that secrecy, which was so much stressed in the debate in that House a few weeks ago, did not seem to be of great importance, at least as regards the great cities. One could see quite well that while the language used was guarded the Board of Health, as they had shown on several occasions before, were not satisfied that the present arrangements and system were satisfactory or capable of dealing adequately with these serious diseases. This certainly justified the attitude of the Edinburgh Corporation and other Scottish local authorities on the matter. It was an appalling fact that last year in Scotland the number of defaulters was 51 per cent. A very large amount of public money was spent in dealing with this subject and it was obvious that a great deal of that money was wasted, and in the name of economy, if humanity was not enough, something else should be tried.

Attacks on the Medical Profession.

Dr. Shiels commented on the return in the report to the attack made last year on the medical profession in regard to certification of people as unfit for employment. He hoped that they had heard the last of that, because in his opinion that attack, while it might have been justified in some cases, had been altogether overdone. Altogether an attitude was being taken up in regard to the medical profession, and incidentally in regard to their patients, which was quite unjustifiable. The report did not sufficiently recognise that owing to unemployment the condition of the people in Scotland during the past few years had been such that they were more liable than formerly to illness. It was unfortunate that by means of threats and suggestions of surcharges and referees and so on medical men should have it suggested to them that they should cut down prescribing to the very minimum amount. He had never seen or heard of any investigation to find out if medical men were supplying sufficiently good medicines and the tonics and building-up preparations which were often necessary. So long as the medicine was cut down and the cost of prescribing was low there was evidently no worry as to whether the insured person was getting proper remedies. The whole tendency of the system was to cause the doctor to be afraid to give what in many cases would only be adequate for the nature of the case.

Sir R. Hamilton called attention to the enormous value of the work of the Highlands and Islands Medical Service Fund. Since the Fund was instituted in 1913 money values had altered enormously. The Fund was expected to do the same work to-day, when costs were infinitely higher, as it was doing in 1913. In a short time, unless a further contribution was made, the work of the Fund could not be carried on, and it would have to come to an end in 18 months. He had it on the best authority that another £25,000 a year was required. A branch of the work which had been an outstanding success had been the appointment of consulting surgeons in the outer islands.

Mr. Scrymgeour, dealing with venereal disease, said that there was evidence that the Scottish Board of Health would like to do something more, but were being held back by the English Ministry of Health. The Liverpool Bill reached the second reading stage without challenge, but when the Edinburgh Bill came up, it was defeated. The instigation of the Government, on representations from the Secretary for Scotland, was against the Bill.

Sir Archibald Sinclair emphasised what Dr. Shiels had said about harrying doctors for over-prescribing. He asked for an assurance from the Government that the efforts of the local people to maintain and improve the equipment of the Bignold Hospital, in Wick, and the Dunbar Hospital, in Thurso, would be supported, and in particular

that they would be able to obtain the much needed services of a surgeon.

Mr. STEPHEN complained about a paragraph in the report of the Scottish Board of Health dealing with the certification by doctors under the National Health Insurance scheme. He challenged the implied reflection in it that doctors in Scotland were not acting as professional men with the responsibilities which they undertook when they became doctors, and that they were allowing people to draw sick benefit when they were not entitled to it. The experience of those who had to take advantage of National Health Insurance was that, so far from its being easy to get a certificate of ill-health, the tendency was to send people back to work when they were unfit to go. It was obvious that the paragraph in the report was written to try to terrorise the timid members of the profession into sending people back to work before they were fit to return, or to keep them from giving certificates to members of the working classes who, through being unemployed and consequently unable to get proper food, had got into an unhealthy condition.

Reply to the Debate.

Major ELLIOT, Under Secretary of State for Scotland, replying to the debate, said that Mr. Stephen had spoken of reflections and attacks on the medical profession contained in the report. The spectacle of Mr. Stephen defending the medical profession against the attacks of Sir Leslie Mackenzie was one that they might well leave to the delighted laughter of the medical profession in Scotland. There were many houses in Scotland which not only did they regard as unfit for human habitation, but their fathers and grandfathers had also done so, and he sometimes thought the very savages in the fields would also have classified as unfit. Those were the houses that the Board of Health wished to get rid of in the first place, and until they made a beginning with them it was useless to re-classify houses, and say that no houses were satisfactory unless there were three rooms, with bathroom, water closet, and other modern conveniences. They had done their utmost to impress on the local authorities who were building houses that people at present were suffering acutely not only from unsatisfactory houses but from overcrowding. A cut had taken place in the English housing subsidy, but none took place in that for Scotland, and they had the assurance that none would be made until March 31st. In regard to the subsidy for the Highlands and Islands Medical Service, that, again, would have to be considered. It was now £42,000 a year, but the Fund was drawing on its unexpended balances to make up an expenditure of £62,000 a year. The Secretary of State would again approach the Treasury, and he had no doubt that they would succeed in getting a substantial increase in the statutory rate of that subsidy. The report of the Scottish Board of Health was a review of the work of the local authorities. It pointed out many directions in which that work needed to be expanded and in which it could be greatly advantaged by a better system of coöperation among the local authorities. All these things were being brought up, considered, and dealt with in the great financial measures now before Parliament.

The debate was adjourned.

HOUSE OF LORDS.

THURSDAY, JUNE 7TH.

National Health Insurance Bill.

Viscount GAGE, in moving the second reading of the National Health Insurance Bill, said that it was an agreed measure between the two parties chiefly concerned. The criticism which had been, so far, directed against the Bill was not directed against what it did, but what it did not do. The Minister of Health had proceeded on the lines of doing as much as he could to simplify administration, to extend the advantages of medical and other benefits, and also to prevent abuses without giving offence to susceptibilities. Also, he had naturally taken into consideration the very important question of expense, for in the present depressed state of industry he had not considered it advisable to add to the already considerable burdens occasioned by the social services. The noble lord went on to explain the provisions of the Bill. In conclusion, he claimed that the measure would remove many grievances and would simplify administration to a very large extent. The extent to which it encroached on public funds was very small.

Lord GORELL said that he thought that Lord GAGE was putting the case a little high when he said that this Bill was an agreed measure. Technically, perhaps, it was so, but not if that phrase was taken as meaning that those with whom he (Lord Gorell) was associated could in any sense be said to be content with its provisions. No full explanation had been given, either in their Lordships' House or in the House of Commons, as to why the powers of the Minister of Health, with a large Parliamentary majority behind him, were so limited, and why it should not have been possible to take a much bigger view of the whole question of National Insurance. He regretted greatly that there had been no advance at all in regard to specialists' services. He regretted particularly that the great question of maternal mortality had been left wholly untouched. He would have liked to see something more done emphasising the necessity for attendance in maternity cases. The Bill could not be regarded as final; it was a small instalment, an improvement in machinery, and as such he accepted it and was glad to have it placed on the Statute Book.

Earl BEAUCHAMP said he was glad to see that His Majesty's Government now welcomed the institution of national insurance and were anxious to make it an integral part of the national life. He agreed, however, with Lord Gorell that this measure did not go far enough. It only carried out 32 out of the 122 recommendations of the Royal Commission. Adequate justice was not being done to the insured people of this country, and would not be done until the money which had been taken from them had been restored.

Lord COZENS-HARDY said that the Bill, so far as it went, certainly improved the great system of National Health insurance, and for that reason he welcomed it, but he regretted that the Government had not had the courage of their convictions in regard to some of those extensions of medical benefit which on all hands were regarded as urgently necessary. There was one point in regard to Clause 16. Under the present arrangements for medical benefit the insurance committee had to set up statutory subcommittees to investigate complaints concerning the services included in medical benefit, whether relating to doctors or chemists. These medical and pharmaceutical subcommittees did very useful and important work. Complaints of this nature could only be investigated satisfactorily locally, and he trusted that they would have some assurance that provision for similar machinery for investigating complaints in regard to any such local services would be made whether those services were statutory or additional benefits. In particular, he hoped that they would be assured that insurance committees would be required to set up a dental service subcommittee on the same lines as the medical service subcommittee.

The Bill was read a second time.

MONDAY, JUNE 11TH.

Food and Drugs (Adulteration) Bill.

Viscount GAGE, in moving the second reading of the Food and Drugs (Adulteration) Bill, said that it was a measure which consolidated legislation relating to the sale of food and drugs extending over a period of about 50 years.

The Bill was read a second time.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 6TH.

Storage of Poisonous Gases.

Lieut.-Commander KENWORTHY asked the Home Secretary what regulations were in force for preventing the storage of poisonous gases near large centres of population, and what steps were taken to prevent their accidental release; if his attention had been drawn to the disaster at Hamburg where a supply of phosgene gas was accidentally released, with many casualties; whether he was satisfied that the regulations in this country were sufficient to avoid any such danger and that those regulations were strictly adhered to; and whether the police had a supply of gas masks available for use in the event of an emergency.—Lieut.-Colonel Sir V. HENDERSON, Under-Secretary for the Home Office, replied: There are no such regulations in force in this country, and the considerable use which is made of phosgene and other poisonous gases in various industrial processes necessitates the storage of these gases in the factories concerned. The precise cause of the Hamburg disaster is not clear, but it is noteworthy that the container at Hamburg appears to have been of much greater capacity, and therefore liable to far greater stress than the containers generally in use in this country. The chief safeguard against accidental release is that the containers should be of adequate strength, and the inquiries my hon. friend has made on this point indicate that the containers in use here have a wide margin of safety and that the position generally is satisfactory. An inquiry, however, into the storage of such gases is at present being carried out by a committee of the Scientific and Industrial Research Department, and it will be necessary to review the situation in the light of their findings. The supply of gas masks to the police will be considered, but on present information this would hardly appear to be necessary.

Mr. THURTLE asked the Secretary of State for War whether any phosgene gas, or gas of a similar nature, was in the possession of the British Army either at home or abroad.—Sir L. WORTHINGTON-EVANS replied: Certain small quantities of phosgene and similar compounds are kept by the Army for use in research and experimental work.

Slum Clearances in Wales.

Sir ROBERT THOMAS asked the Minister of Health whether any local authority or authorities in Wales and Monmouthshire, other than Welshpool Town Council, had put forward schemes for slum clearance, and on what grounds in each case the schemes were rejected by his department.—Sir KINGSLEY WOOD replied: No schemes have actually been submitted by any other local authority; I am aware that the urban district council of Pontypool and the town council of Merthyr Tydfil have had such schemes under consideration; the former council deferred their scheme in order to concentrate on the erection of new houses, and in the latter case the present financial position of the council has led to the deferment of the scheme.

THURSDAY, JUNE 7TH.

Motorists and Excessive Noise.

Sir ROBERT THOMAS asked the Home Secretary how many motorists were prosecuted for excessive noise during the last six months of 1927, and up to the present date this year.—Sir WILLIAM JOYNSON-HICKS replied: The number of prosecutions in the Metropolitan Police District for excessive noise during the last six months of 1927 was 1622, and from Jan. 1st to April 30th, 1928, inclusive, was 4150.

Coroners and Instructions to Juries.

Mr. MALONE asked the Home Secretary whether, in view of the instruction given by the coroner to the jury at the inquest on a recent case where death was found to have been due to poisoning—namely, that they must name some person as having administered the poison in order that there might be further inquiry, and in view of the fact that another coroner gave a completely contrary instruction to the jury in similar circumstances, so that an open verdict was returned, he would consider the introduction of a measure to define more clearly the instructions to coroners for advising juries in cases of this sort.—Sir WILLIAM JOYNSON-HICKS replied: It would be wrong for me to comment on the discharge by any judicial officer of his judicial functions, but I am bound to say that I do not think that the effect of the coroner's directions is correctly stated in the first part of the question. In any case I see no reason as at present advised for considering any amendment of the law on this point.

Nursery Schools.

Mr. TREVELYAN asked the President of the Board of Education whether steps had been taken to encourage the provision of nursery schools, and what was the Board's policy in this respect.—Lord EUSTACE PERCY replied: The Board's policy in this, as in other matters, is that laid down three years ago in Circular 1358—i.e., "to ask all local authorities to consider the more immediate needs of their areas in all grades of education, and to formulate programmes of action covering a definite period." Local authorities are now engaged in carrying out programmes formulated in accordance with this policy, and covering the three years 1927–30. This policy is based on the principle that each local authority is best able to judge the relative urgency of different proposals for educational development in its own area, and that pressure from the Board in favour of particular proposals is more likely to retard educational development than to advance it. Since last year the Board have approved proposals for three new nursery schools.

Water-supply in Schools.

Mr. WELLOCK asked the President of the Board of Education whether steps had been taken to secure the supply of hot water in public elementary schools, more especially in infant departments.—Lord EUSTACE PERCY replied: The Board fully recognise the desirability of providing a supply of hot water, especially in infants' schools, and it is their practice to suggest that it should be provided in all cases where it appears reasonably practicable to do so.

Mr. TREVELYAN asked the President of the Board of Education whether he had obtained the names of those schools referred to on p. 71 of Sir George Newman's report on the Health of the School Child for the year 1925, as being entirely without any water-supply, and what steps he had taken to require a water-supply to be provided in them.—Lord EUSTACE PERCY replied: I have obtained the names of the Nottinghamshire and Herefordshire schools referred to. A number of the schools are included in the Black List survey, and in some cases a water-supply has now been laid on. In the large majority of the cases a supply of water, though not actually laid on to the school, is available in the immediate vicinity, often in adjoining premises, and there are very few cases where water has to be carried from any distance. The right hon. gentleman will, moreover, realise that the water-supply at a village school very frequently depends upon the supply available for the village generally, and cannot be dealt with by the school authorities as a separate problem.

Medical Benefit to Aged Friendly Society Members.

Mr. SMEDLEY CROOKE asked the Minister of Health if his attention had been drawn to the effect of the discontinuance of the State grant in aid of medical benefit to aged friendly society members, and whether, in view of the comparatively small amount involved, he would give the matter further consideration.—Mr. CHAMBERLAIN replied: The total amount of the grant in question was less than £1000 in 1926 and was rapidly diminishing. The money had to be distributed amongst any of the 7000 approved societies and branches which had any members who were permanently disabled on July 15th, 1912, and the average amount payable to any society or branch was less than 10*s*. The distribution of these trifling sums involved considerable work on the part of the societies concerned and of my department, the cost for which far exceeded the total sum to be distributed. In these circumstances I have come to the conclusion that the continuance of the grant is not justified. This decision has been communicated to the Consultative Council, on which approved societies of all types are represented, and has received their concurrence.

Report of Committee on Vaccination.

Dr. VERNON DAVIES asked the Minister of Health if he had received the report of the committee appointed to inquire into vaccination, and if this report would be available for members of the House.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. This report will be published shortly as a command paper.

Discharge of Crude Sewage into a River.

Mr. WARDLAW-MILNE asked the Minister of Health whether his attention has been called to the fact that quantities of fish had been recently killed in the River Penk owing to the action of the corporation of Wolverhampton in discharging crude sewage into that river; whether a certificate was granted to the corporation by the Ministry of Health authorising that proceeding; and, if so, upon what grounds that was done.—Mr. CHAMBERLAIN replied: I am aware of this matter. A certificate was granted under a local Act of 1891 by an inspector appointed by me, but under the Act, on his own responsibility. There is an appeal to me; and an appeal has, in fact, been received and is under consideration. I may add that the certificate did not authorise the discharge of crude sewage.

Local Authorities and Food and Drugs Act.

Dr. VERNON DAVIES asked the Minister of Health if he was aware that the medical officer of health or sanitary inspector of many local authorities did not appreciate the fact that they were entitled to procure samples of food and drugs under the Sale of Food and Drugs Acts for analysis, and, if found to be adulterated, prosecute the offender, although these officers might not be the usual authority for the administration of these Acts in their area; and if he would draw the attention of all local authorities to their powers in this respect.—Mr. CHAMBERLAIN replied: I will bear my hon. friend's suggestion in mind.

Committees on Silicosis.

Mr. KELLY asked the Home Secretary the number of committees set up in Great Britain to deal with cases of silicosis and for deciding the payment of compensation to workers incapacitated by silicosis.—Sir WILLIAM JOYNSON-HICKS replied: I assume the hon. Member refers to the Joint Committee set up under the Refractories Industries (Silicosis) Scheme. There are seven such committees. In reply to further questions the Home Secretary said that an inquiry into the pottery industry was taking place, but that notice would be required before he could say anything about silicosis among brickmakers.

Vaccination Statistics.

Mr. SHEPHERD asked the Minister of Health if he would furnish a return showing the number of infants vaccinated per cent. of the births for the past five years in Newcastle-on-Tyne, Birmingham, Manchester, Liverpool, Sheffield, Bradford (Yorks), Leeds, Warrington, and Darlington.—Mr. CHAMBERLAIN replied: Figures for 1927 are not yet available, but the following statement gives the number of births registered, and the number and percentage of these successfully vaccinated, in each of the years 1922 to 1926. In some cases the figures include those for areas outside the county boroughs mentioned in the question which are

situated within the same vaccination officer's district, as separate figures for these areas are not given in the vaccination officer's return.

Area.—(A) Newcastle-upon-Tyne C.B.; (B) Birmingham C.B. (with Perry Barr U.D.); (C) Manchester C.B. (with Failsworth U.D.); (D) Liverpool C.B. (with part of Sefton R.D.); (E) Sheffield C.B. (the part within Sheffield Union); (F) Bradford C.B. (with Clayton, Denholme, and Drighlington U.D.'s); (G) Leeds C.B.; (H) Warrington C.B.; (I) Darlington C.B.

Area.	Year.	Births registered.	Successfully vaccinated.	% vac. to births.	Area.	Year.	Births registered.	Successfully vaccinated.	% vac. to births.
(A)	1922	7,433	3,951	53	(F)	1922	5,431	1,420	26
	1923	6,962	4,184	60		1923	5,512	1,730	31
	1924	6,971	4,442	64		1924	5,137	1,588	31
	1925	7,030	4,713	67		1925	5,045	1,438	29
	1926	6,729	4,580	68		1926	4,888	1,580	32
(B)	1922	20,184	11,768	58	(G)	1922*†	9,803	5,276	54
	1923	19,355	12,671	65		1923*†	9,311	5,725	61
	1924	18,614	12,264	66		1924*	8,914	5,596	63
	1925	18,283	11,401	62		1925	8,490	4,949	58
	1926	18,352	11,237	61		1926	8,446	5,060	60
(C)	1922	16,537	9,236	56	(H)	1922	1,808	1,183	65
	1923	16,189	9,808	61		1923	1,789	1,205	67
	1924	15,289	9,287	61		1924	1,656	1,125	68
	1925	14,989	8,845	59		1925	1,736	1,154	66
	1926	14,856	8,869	60		1926	1,645	1,067	65
(D)	1922	21,531	15,428	72	(I)	1922	1,518	263	17
	1923	20,663	15,563	75		1923	1,461	377	26
	1924	20,600	15,274	74		1924	1,423	314	22
	1925	19,617	14,153	72		1925	1,318	277	21
	1926	19,902	14,258	72		1926	1,319	299	23
(E)	1922	10,631	5,040	47					
	1923	10,012	5,774	58					
	1924	9,615	5,424	56					
	1925	9,238	5,177	56					
	1926	8,976	5,131	57					

* Including part of Morley M.B.
† Including parts of Rothwell U.D. and Hunslet R.D.
Vac. = Vaccination.

FRIDAY, JUNE 8TH.

Maternal Mortality in Kensington and Southwark.

Mr. DAY asked the Minister of Health whether he was in a position to give the number of deaths per 1000 of the population which had occurred under the head of maternal mortality during the last available periods in the boroughs of Kensington and Southwark respectively.—Mr. CHAMBERLAIN replied: The provisional numbers of deaths classified as due to childbirth for the Metropolitan Boroughs of Kensington and Southwark in 1927 amounted, respectively, to rates of 0·034 and 0·049 per 1000 of the population of those boroughs. The corresponding rates, according to the more usual calculation per 1000 live births, were 2·26 and 2·57 respectively.

MONDAY, JUNE 11TH.

Tuberculosis Patients and Vaccination.

Mr. THOMAS WILLIAMS asked the Minister of Health if he was aware of cases in which sufferers from tuberculosis had been precluded from receiving sanatorium treatment unless the patient consented to be vaccinated; and whether he had sanctioned regulations to that effect.—Sir KINGSLEY WOOD replied: The answer to both parts of the question is in the negative.

Mr. WILLIAMS asked if the right hon. gentleman was aware that in the West Riding of Yorkshire it was said that some regulation existed which precluded a person suffering from tuberculosis from entering a sanatorium unless he was vaccinated, and if he would make inquiries.

Sir KINGSLEY WOOD replied in the negative. He said he would want something far more definite than what some one said in some part of the country. If Mr. Williams had any definite information he would inquire into it.

Mr. WILLIAMS asked if he was to understand that the Ministry was not responsible for a regulation of that kind.

Sir KINGSLEY WOOD: I have just said so.

TUESDAY, JUNE 12TH.

Pharmacists in the R.A.M.C. Territorial Units.

Sir WILFRID SUGDEN asked the Secretary of State for War whether any steps had been taken to secure the services of pharmacists in Royal Army Medical Corps Territorial units.—Sir L. WORTHINGTON-EVANS replied: Provision for the enlistment of dispensers is made in the Establishments of Field Ambulances and General Hospitals of the Territorial Army.

Sir W. SUGDEN asked if these pharmacists were invited or desired to serve in the Royal Army Medical Corps.

Sir L. WORTHINGTON-EVANS replied that they certainly would be eligible if they desired to enlist.

Storage of Drugs and Medical Supplies in the Army.

Sir WILFRID SUGDEN asked the Secretary of State for War at what time in their military career quarter-masters of the Royal Army Medical Corps received instruction in the storage of drugs and medical supplies in such a manner as to prevent waste and deterioration; whether they were at any time subjected to an examination on this subject; and, if so, what steps were taken to ensure that the examiners themselves possessed an intimate knowledge of the storage of drugs and medicines.—Sir L. WORTHINGTON-EVANS replied: Drugs and medical supplies are only stored in military hospitals in quantities sufficient for approximately the current six months' requirements. Instruction in their storage is given as part of the course of dispensing which all soldiers of the Royal Army Medical Corps have to pass before attaining the rank of sergeant. The examination at the end of the course is conducted by a board of medical officers.

New Medical Evidence and Pension Appeals.

Lieut.-Colonel THOM asked the Minister of Pensions what was the procedure by which new medical or other evidence which was not before a pensions appeal tribunal on the hearing of a war pension claim, and which, had it been before the tribunal, would or might have resulted in a decision different from that arrived at, was brought to the notice of the tribunal; and whether the claimant in such circumstances was given an opportunity before the tribunal of leading and being heard on, and having his claim reconsidered in the light of, such new evidence.—Lieut.-Colonel STANLEY replied: The decision of an Appeal Tribunal is, by Statute, final, and the provisions of the War Pensions Act, 1919, do not admit of a re-hearing by the Tribunal of cases once decided. As, however, the House has on more than one occasion been informed, the Ministry have been enabled, in exceptional cases where fresh material evidence is produced, to reconsider the claim. If such evidence is produced in a case where an appeal has been made and has failed, it is their practice to consult the President of the Tribunal informally before making any recommendation for a grant, in order that no point in favour of the claimant may be overlooked.

Final Pension Awards.

Mr. ROBINSON asked the Minister of Pensions if he would issue life pensions at the current rate to all pensioners in receipt of an award for 12 months, and until further instructions, who had not made an application for treatment since the issue of the award.—Lieut.-Colonel STANLEY replied: I agree with the hon. Member as to the desirability of making final awards in all cases as early as possible, but it would not be justifiable, nor would it be in the interests of pensioners, that such awards should be made on the lines suggested by the hon. Member without proper medical consideration of the individual cases.

Specialist and Consultant Service on National Insurance.

Mr. HORE-BELISHA asked the Minister of Health whether he was now in a position to make a statement regarding the recommendations of the consultative council in respect of the proposals made by the Royal Commission on National Health Insurance that the scope of the benefit should be extended to include a consultant and specialist medical service, and that the necessary funds for this purpose should be obtained by a partial pooling of future surpluses of approved societies.—Sir KINGSLEY WOOD replied: The recommendations of the Royal Commission, to which the hon. Member refers, were very fully considered by the consultative council, who unanimously endorsed the recommendation that the first extension of the statutory benefits of National Health Insurance should take the form of the widening of the scope of medical benefit to include a specialist and consultant service. The Council, however, by a large majority, declined to endorse the recommendation of the Royal Commission that the cost of this extension should be met by means of a partial pooling of future surpluses of approved societies.

CASUALTIES AND OUT-PATIENTS AT THE LONDON HOSPITAL.—At the recent Court of Governors it was reported that the number of minor casualties treated during the past quarter was 5971, as compared with 11,289 in the corresponding quarter of last year. The fall is due to the policy of discouraging the attendance in the receiving-room of patients suffering from very minor ailments who are well able to pay for private treatment. It has been decided to alter the charge to out-patients in a position to pay to a uniform amount of 1s. for a week's treatment, including dressings, X rays and medicine. The poorest patients will, however, still be treated free. The amount received for the quinquennial appeal is now £79,000.

Obituary.

WILLIAM ALEXANDER YOUNG, M.B. ST. AND.

HARD upon the tragic death from yellow fever of Hideyo Noguchi, which occurred on May 21st at Accra, comes the sad information that the same disease has carried off William Young, the Director of the Medical Research Institute of the Gold Coast. The tragedies may well be connected, as it seems probable that Dr. Young incurred the fatal infection when making a post-mortem examination of Prof. Noguchi. William Young, although he received his education entirely in Scotland, was a Londoner, and was born in 1889 in Fulham. He was educated at Forfar Academy and University College, Dundee, the medical school affiliated to the University of St. Andrews, and graduated in medicine and surgery in 1911. Returning to England, he was appointed house physician at the Royal Infirmary, Halifax, and held a further house appointment at the Seamen's Hospital, Greenwich, after which he acquired the diploma in tropical medicine and hygiene at the University of Liverpool. In 1913 he received an appointment in the West African Medical Service, and the war found him at his post in Sierra Leone. He immediately took a commission in the R.A.M.C. and served throughout the war, mainly in the Cameroons campaign. On the cessation of hostilities he was appointed assistant bacteriologist at the Medical Research Institute in Nigeria, where he was soon recognised, both by the work that he did and his written accounts, as an accurate diagnostician and a really scientific bacteriologist. The pathology of many tropical diseases—blackwater fever, trypanomiasis, and yellow fever especially—was studied by him intensively, as the various circumstances of their epidemicity and endemicity came before him, and his contributions to the transactions of the Royal Society of Tropical Medicine and Hygiene were always thoroughly well informed. His keen sense of proportion may be seen in his work on the bacteriology of Sierra Leone waters which appeared in this journal, and in many other contributions to the same pages. He was appointed Director of the Medical Research Institute at Accra some three years ago, and all workers in the field which Young had made his own regarded him as an observer from whom the finest results might be obtained, and know well the loss inflicted upon their school of investigation by his death in the prime of life.

Outside his professional work Dr. Young was known for his interest in model engineering, while he was a particularly expert swimmer.

KENNETH ALEXANDER MACLEAN, M.B., CH.B. EDIN.

WE regret to record the premature death of Dr. Alexander Maclean, which occurred recently on the Gold Coast, where he was in private practice. He was educated at the University of Edinburgh, where he graduated M.B., Ch.B. in 1910, when he came to practice in London, becoming assistant medical officer to the Paddington and Kensington Tuberculosis Dispensary. On the outbreak of war he took a commission in the R.A.M.C. and served with the 54th Division in Gallipoli. In 1916 he was appointed bacteriologist at Ismailia, and he remained working at this station until the middle of 1919, when he took up practice at Seccondee on the Gold Coast. Here, as might be expected of a man of tried professional ability, with a real insight into scientific medicine and a sound working knowledge of laboratory methods, he promptly made a position for himself. He conducted a private hospital and had a large practice amongst natives as well as Europeans, and while by his patients he was universally respected for his skill, his kindliness and generosity were always in evidence. His name further will be remembered on the West Coast of Africa as being the first observer to detect and prove microscopically that in a recent outbreak in the Ashanti gold fields the disease to be dealt with was plague.

Dr. Maclean had been for over eight years in Seccondee, and his untimely death from heart failure is a loss to medicine, to his friends, and to the Colony.

Medical News.

UNIVERSITY OF OXFORD.—At a Congregation on June 9th the degree of Doctor of Medicine was conferred (*in absentia*) on W. F. Skaife.

UNIVERSITY OF CAMBRIDGE.—Mr. J. B. Buxton, F.R.C.V.S., has been re-elected to the Chair of Animal Pathology.

UNIVERSITY OF LONDON.—At recent examinations the following candidates were successful:—

THIRD (M.B., B.S.).

Honours.—D. S. M. Barlow (*c*), Univ. Coll. Hosp.; H. I. Deitch (*d*), Middlesex Hosp.; Emma J. King (*c*), London (R.F.H.) School of Med. for Women; T. Morton (*a*), St. Thomas's Hosp.; H. J. Seddon (*b, d, e, University Medal*), St. Bart.'s Hosp.; F. R. Stansfield (*a*), Univ. of Leeds; and H. C. Trowell (*b*), St. Thomas's Hosp.

(*a*) Distinguished in Medicine; (*b*) in Pathology; (*c*) in Forensic Medicine; (*d*) in Surgery; (*e*) in Midwifery.

Pass.—F. W. Allinson, Univ. Coll. Hosp.; S. W. Allinson, Univ. Coll. Hosp.; I. Bakhsh, Guy's Hosp.; A. Bonnard, Univ. Coll. Hosp.; Irene F. Callender, St. Mary's Hosp.; M. Carpenter, Univ. Coll. Hosp.; Doris B. Clay, London (R.F.H.) School of Med. for Women; K. M. Cobban, Univ. of Liverpool; M. Coleman, Univ. Coll. Hosp.; N. E. Cook, St. Bart.'s Hosp.; J. N. Cumings, King's Coll. Hosp.; Constance M. Cusden, Charing Cross Hosp.; S. Davies, Univ. Coll. Hosp.; Jessie Edwards, Charing Cross Hosp.; Marguerite M. Fenn, London (R.F.H.) School of Med. for Women; G. M. FitzGibbon, St. Thomas's Hosp.; Dorothy D. Forster, St. Mary's Hosp.; F. Forty, Univ. Coll. Hosp.; Mary Fraser, London (R.F.H.) School of Med. for Women; P. J. Ganner, Univ. of Birmingham; Yetta Gimpelson, St. Mary's Hosp. and London (R.F.H.) School of Med. for Women; Barbara M. L. Glover, London (R.F.H.) School of Med. for Women; E. D. Y. Grasby, Guy's Hosp.; A. C. Hancock, Guy's Hosp.; J. C. Hawksley, Univ. Coll. Hosp.; R. A. Hill, St. Thomas's Hosp.; T. H. Hobbes, St. Bart.'s Hosp.; L. Holmes, St. Bart.'s Hosp.; Effie L. Hutton, London (R.F.H.) School of Med. for Women; Morfydd R. Jones, London (R.F.H.) School of Med. for Women; A. B. Kettle, Guy's Hosp.; M. C. Lavin, London Hosp.; Flora W. Lloyd, St. Mary's Hosp.; M. F. B. Lynch, London Hosp.; A. R. Macdonald, St. Bart.'s Hosp.; A. M. McMaster, St. Bart.'s Hosp.; E. H. Madge, Univ. Coll. Hosp.; M. L. Maley, St. Bart.'s Hosp.; Muriel M. Manley, London (R.F.H.) School of Med. for Women; A. N. T. Meneces, Univ. Coll. Hosp.; Mary M. Moller, London (R.F.H.) School of Med. for Women; R. H. Morley, Univ. of Leeds; E. G. Muir, Middlesex Hosp.; J. W. Notley, Univ. of Birmingham; Lois J. Ogle, London (R.F.H.) School of Med. for Women; Evelyn D. Owen, Charing Cross Hosp.; J. R. Pierre, Univ. Coll. Hosp.; E. S. Phillips, Guy's Hosp.; R. F. Phillips, St. Bart.'s Hosp.; A. M. Richards, Univ. Coll. Hosp.; Audrey E. Russell, Univ. Coll. Hosp.; J. E. Saville, St. Thomas's Hosp.; Thelma Shepherd, London (R.F.H.) School of Med. for Women; Gwladys V. Smallpiece, London (R.F.H.) School of Med. for Women; R. S. Smith, Univ. Coll. Hosp.; K. H. Southall, Univ. Coll. Hosp.; C. A. Stanley, St. Thomas's Hosp.; Mary M. Tulloch, Charing Cross Hosp.; and C. L. Worthington, Guy's Hosp.

Supplementary Pass List.—The following students have passed in one of the two groups of subjects:—

Group I.—Sophia Antonovitch, London (R.F.H.) School of Med. for Women; A. L. Basham, St. Thomas's Hosp.; A. C. H. Bell, St. Bart.'s Hosp.; Ruth Bocock, London (R.F.H.) School of Med. for Women; W. P. M. Davidson, St. Bart.'s Hosp.; Helena M. de Hartog, St. Mary's Hosp.; Marjorie M. Dobson, London (R.F.H.) School of Med. for Women; Dorothy V. Dunolly, Univ. of Durham; Dorothy E. Eglington, London (R.F.H.) School of Med. for Women; Geraldine W. Everett, London (R.F.H.) School of Med. for Women; G. S. Ferraby, King's Coll. Hosp.; C. Gross, Guy's Hosp.; Helen M. Herbert, London (R.F.H.) School of Med. for Women; Alice D. M. Hodge, London (R.F.H.) School of Med. for Women; E. C. H. Huddy, Guy's Hosp.; D. F. Kanaar, Guy's Hosp.; C. F. Moore, St. Bart.'s Hosp.; Mary E. Pease, Univ. Coll. Hosp.; G. C. Pether, Middlesex Hosp.; Gwynedd M. Phillips, King's Coll. Hosp.; Edith J. L. Smith, London (R.F.H.) School of Med. for Women; E. R. Smithard, Middlesex Hosp.; and E. S. Vergette, St. Bart.'s Hosp.

Group II.—Mabel A. Baker, London (R.F.H.) School of Med. for Women; S. Bernstein, Univ. Coll. Hosp.; S. J. M. De Navasquez, Guy's Hosp.; D. E. Dunnill, Guy's Hosp.; H. Evans, London Hosp.; R. V. Farr, Univ. of Birmingham; A. McK. Fleming, Middlesex Hosp.; W. H. George, London Hosp.; J. H. F. Jayasuriya, Ceylon Med. Coll. and Middlesex Hosp.; I. J. Jones, St. Thomas's Hosp.;

Gladys E. McCabe, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.; M. Mackenzie, Guy's Hosp.; H. Mannington, Middlesex Hosp.; C. G. MacM. Nicol, Charing Cross Hosp.; G. L. S. Plumbly, Univ. Coll. Hosp.; E. I. Puddy, St. Mary's Hosp.; J. R. Rickett, Guy's Hosp.; I. M. Robertson, St. Bart.'s Hosp.; Clarice A. Skidmore, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.; A. G. Watkins, Univ. Coll. Hosp.; P. C. Wickremesinghe, Ceylon Med. Coll. and Guy's Hosp.; and Elsie E. Wright, London (R.F.H.) School of Med. for Women and St. Mary's Hosp.

UNIVERSITY OF BRISTOL.—At recent examinations the following candidates were approved:—

FINAL EXAMINATION FOR M.B., CH.B.

Part II.—*‖T. H. Berrill, B. J. Boulton, †R. D. Jenkins, *Helen B. Murgoci, and ‡T. B. Wansbrough.

*With distinction in Special Pathology. †With distinction in Public Health. ‡ With distinction in Obstetrics. ‖ With Second Class Honours.

Group II.—D. E. C. Andrew and A. J. M. Grimston.

Part I. (including Forensic Medicine and Toxicology).—Rowena M. Hickman, April D. James, Mabel F. Potter, and *N. L. Price (with distinction in Materia Medica, Pharmacy, Pharmacology, and Therapeutics).

Forensic Medicine and Toxicology only.—Isabella J. Armstrong.

FINAL EXAMINATION FOR B.D.S.

Wynne M. Evans.

DIPLOMA IN DENTAL SURGERY.

J. H. Edwards, H. J. Phillips, and S. M. Weir.

GUY'S HOSPITAL MEDICAL SCHOOL.—At 4 P.M. on June 26th, Dr. Arthur Hopewell-Smith, of the University of Pennsylvania, will give a lecture at Guy's Hospital, entitled The Process of Osteolysis: an Historical Study.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—Sir William Beveridge, vice-chancellor of the University of London, will distribute prizes in the Governor's Hall of the hospital on Wednesday, June 20th, at 2.30 P.M.

LONDON HOSPITAL MEDICAL COLLEGE.—The prizes will be distributed at 3 P.M. on Friday, June 29th, by Sir Samuel Hoare, Secretary of State for Air.

THE Minister of Health has appointed Mrs. Barton, J.P., as an additional member of the Departmental Committee set up to consider the working of the Midwives Acts. (See THE LANCET, May 26th, p. 1104.)

INTERNATIONAL CONGRESS OF OTOLOGY AND LARYNGOLOGY.—At this congress, which opens on July 29th at Copenhagen, speakers will be limited to ten minutes owing to the number of papers which are being presented. The subscription for those attending the congress is 30 Danish kroners, and 15 kroners for each member of the family. Payment should be made to Dr. Jorgen Moller, 13, Vestre Boulevard, Copenhagen K.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

TUESDAY, June 19th.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.

THURSDAY.—5 P.M., DERMATOLOGY. (Cases at 4 P.M.) *Cases:* Dr. G. B. Dowling: (1) Dermatitis Vegetans? (2) Unusual Tuberculide. (3) Annular Sarcoid. Other cases will be shown.

FRIDAY.—8 P.M., EPIDEMIOLOGY. Annual General Meeting: Election of Officers and Council. *Paper:* Dr. J. Alison Glover: Some Observations on Nasopharyngeal Infections in Public Schools.

RESEARCH DEFENCE SOCIETY, 11, Chandos-street, Cavendish-square, W.

TUESDAY, June 19th.—3 P.M., Sir Bernard Spilsbury: The Work and Responsibilities of a Pathologist (Stephen Paget Memorial Lecture).

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.

MONDAY, June 18th, to SATURDAY, June 23rd.—CHARING CROSS HOSPITAL, W.C. Clinical demonstration by Mr. E. D. D. Davis in the Ear, Nose and Throat Department on Fri., at 11 A.M.—ROYAL EYE HOSPITAL, St. George's Circus, Southwark, S.E. Clinical demonstration by Mr. Dorrell on Fri., at 3 P.M.—SOUTH LONDON HOSPITAL FOR WOMEN, 88, Newington Causeway, S.E. Clinical demonstration by Mrs. Tindal-Robertson on Wed., at 10.30 A.M. Women only admitted to this demonstration. The above are free.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Special course in Gynæcology; occupying some mornings and some afternoons.—CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Special course. Post-graduates can spend the entire day at the hospital.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. General Practitioner's course, 4.30 to 6 P.M., Medicine, Surgery, and Specialties. Further particulars from the Secretary (Mayfair 2236).

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.

MONDAY, June 18th.—2.30 to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.

TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.

WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.

THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M., Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.

FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

On Wednesday and Friday, at 2.30 P.M., there will also be demonstrations of Eye and Medical (Children) Cases by Mr. N. B. B. Fleming and Dr. C. E. Sundell respectively.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

TUESDAY, June 19th.—3.15 P.M., Mr. W. B. Gabriel: Foreign Bodies in the Gastro-Intestinal Tract.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, June 18th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Out-patient Clinic.

TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: The Diagnosis of Cerebral Tumours (1).

THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey: Demonstration of Electrical Methods of Treating Paralysis (in Electrical Room).

FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Jacksonian Epilepsy.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.

WEDNESDAY, June 20th.—4 P.M., Dr. E. D. Macnamara: Functional Nervous Disorders.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL Gray's Inn-road, W.C.

MONDAY, June 18th.—1.30 P.M., Mr. R. J. Cann: Hearing Tests.

WEDNESDAY.—1.30 P.M., Mr. N. MacKeith: Examination of the Accessory Sinuses.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.

TUESDAY, June 19th.—3.30 P.M. (at the Jessop Hospital), Prof. Phillips: Gynæcological Aspect of Contraception.

FRIDAY.—3.30 P.M. (at the Royal Hospital), Mr. Ferguson Wilson: Surgical Cases.

Appointments.

CUNNINGHAM, H. BOYD, M.B., B.S. Durh., has been appointed Ophthalmic Specialist Medical Referee under the Workmen's Compensation Act to County Courts Circuits 1 and 2 (Northumberland and Durham).

MARTIN, MARGARET, M.B., Ch.B., M.R.C.P.E., Hon. Assistant Physician, Edinburgh Hospital for Women and Children.

POWELL, A. T. W., M.B., B.S. Lond., Medical Officer of Health, Scunthorpe, Lincs.

Certifying Surgeons under the Factory and Workshop Acts: PARRY, W. E., M.B., B.S. Lond. (City of London); ROSS, R. S., M.B., B.Ch. Belf. (Accrington); SINCLAIR, J. D. S., M.B., Ch.B. Glasg. (Cornwarth, Lanark); and BURNETT, J. F. M., M.B., Ch.B. Aberd. (Bradford-on-Avon).

Vacancies.

For further information refer to the advertisement columns.

All Saints Hospital (for Genito-Urinary Diseases), Vauxhal Bridge-road, S.W.—Res. Sen. H.S. Also H.S. At rate of £200 and £100 respectively.

Barnsley, Beckett Hospital and Dispensary.—H.P. £140.

Barnstaple, North Devon Infirmary.—H.S. At rate of £150.

Birmingham General Hospital.—Asst. S. £50.

Birmingham University.—Asst. Lecturer in Physiology. Also Asst. Lecturer in Biochemistry. Each £300.

Bombay, Cama and Albless Hospitals.—M.O. Rs.800–50–1000.

Brighton, New Sussex Hospital.—Hon. Asst. Ophth. Surg. Also Hon. Clin. Assts.

Bristol, City and Council.—Consultant Aural S. £2 12*s.* 6*d.* per session.

Bristol Eye Hospital, Lower Maudlin-street.—Hon. Rhinologist.

Bury Infirmary.—Sen. H.S. At rate of £200. Also Third H.S. At rate of £150.

Chester Royal Infirmary.—Hon. Asst. P.

City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Radiologist. 150 guineas.
Colchester, Essex County Hospital.—Asst. H.S. and Reg. £120.
Croydon General Hospital.—Hon. Anæsthetist.
Dreadnought Hospital, Greenwich,—H.P. and H.S. At rate of £110.
East London Hospital for Children, &c., Shadwell, E. 1.—Surg. to Nose, Throat, and Ear Dept.
Edgware, Redhill Hospital.—Radiologist.
Erith Urban District Council, &c.—M.O.H. £800.
Gloucester, Gloucestershire Royal Infirmary.—Res. Surg. O. At rate of £175.
Hampstead General and North-West London Hospital, Haverstock Hill, N.W.—Cas. Surg. O. At rate of £100.
Hartlepool, Hartlepool Hospital.—H.S. £150–£200.
Hellingley, Sussex, East Sussex County Mental Hospital.—Jun. Asst. M.O. £350.
Hove Hospital, Sackville-road.—Res. M.O. £150.
Hull, Royal Infirmary.—Asst. H.S. At rate of £150. Also Cas. H.S. £130.
Ipswich, East Suffolk and Ipswich Hospital.—Two H.S.'s. Each at rate of £100.
Leeds, Jewish Herzl-Moser Hospital.—Res. M.O. £50.
London, Corporation of.—M.O.H. £1500.
London School of Hygiene and Tropical Medicine.—Research Studentship in Entomology. £250.
Manchester, Ancoats Hospital.—H.S. Orthopædic. At rate of £100.
Manchester City, Education Committee.—Asst. School M.O. £600.
Manchester, Salford Royal Hospital.—H.P. and H.S.'s. Each at rate of £125.
Margaret Hospital for Consumption, 26, Margaret-street, W.—Hon. Asst. P.
Miller General Hospital for South-East London, Greenwich-road, S.E.—H.P. and H.S. Each at rate of £125.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Hon. Asst. to Ophthalmic Dept. Also Four Med. Regs. Each £250.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg. O. At rate of £100.
Poplar Hospital for Accidents, East India Dock-road, Poplar, E.—Sen. Res. O. £200.
Queen Charlotte's Maternity Hospital, Marylebone-road, N.W.—Asst. Res. M.O. At rate of £80.
Queensland Government, Department of Public Instructions.—M.O. £600–£800.
Reading, Royal Berkshire Hospital.—H.P., First and Third H.S.'s. Each £150.
Royal Army Medical Corps.—Commissions.
Royal London Ophthalmic Hospital, City road, E.C.—Sen. H.S. £150.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—H.P. At rate of £100.
Saint Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.
St. Mary's Hospital, W.—Asst. Pathological Chemist. £300.
St. Paul's Hospital for Diseases of the Genito-Urinary Organs, &c., Endell-street, W.C.—H.S. At rate of £150.
South-Eastern Hospital for Children, Sydenham, S.E.—Asst. Res. M.O. At rate of £75.
Swansea County Borough.—Asst. Dental S. £450.
University of London.—External Examinerships.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O. £150.
Westminster Hospital, Broad Sanctuary, S.W.—Sen. Res. and Cas. O. At rate of £104.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces vacant appointments for Certifying Factory Surgeons at Chagford (Devonshire) and at Oswestry (Shropshire).

Births, Marriages, and Deaths.

BIRTHS.

ALEXANDER.—On June 7th, at Harley-street, the wife of Dr. J. Browning Alexander, of a daughter.

MARRIAGES.

HAWKINS—BOWER.—On June 9th, at Holy Trinity Church, Brompton, S.W., Benjamin Edward Hawkins, M.R.C.S., L.R.C.P., to Edna Gertrude, only daughter of Mr. and Mrs. J. A. Bower, of Dulwich.

KEITH—NOTCUTT.—On June 7th, at St. Mary's Church, Woodbridge, William Brooks Keith, M.C., M.D., of Redwald House, Melton, Suffolk, to Marion Hetty, elder daughter of Mr. and Mrs. R. C. Notcutt, of Topfields, Woodbridge, Suffolk.

DEATHS.

ARMSTRONG.—On June 5th, at Alexandra-road, Bedford Park, W., Robert Stow Armstrong, M.R.C.S., L.S.A., aged 78.

ASHTON.—On June 9th, James Thornhill Ashton, M.B., C.M., for some years resident at Smedley's Hydropathic Establishment, Matlock.

FOSTER.—On June 8th, at the Radcliffe Infirmary, Oxford, of pneumonia, Edward Cecil Foster, M.R.C.S., L.R.C.P., in his 51st year.

WOOLLETT.—On June 7th, at Kingston House, Newmarket, Sidney Winslow Woollett, O.B.E., M.R.C.S., L.R.C.P. (late Major, R.A.M.C.), in his 72nd year.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE RELIABILITY OF INFANTILE MEMORIES.

Being the Substance of an Address from the Chair at a Meeting of the Medical Section of the British Psychological Society.

BY J. A. HADFIELD, M.A. OXF., M.B. EDIN.,
CHAIRMAN OF THE BRITISH PSYCHOLOGICAL SOCIETY, MEDICAL SECTION; LECTURER IN PSYCHOLOGY, LONDON UNIVERSITY.

IT is generally accepted by modern psychopathologists that the psychoneuroses date back in their origin to early childhood experiences, forgotten and repressed, at least as regards their predisposing causes. If this is so, it is very important to discover how far those supposed memories correspond to actual experiences, and how far they are products of the imagination. The methods by which we arrive at those experiences are well known—namely, hypnosis or free association. They bring an enormous mass of infantile experience to the surface of consciousness, and this material has been systematised into the various theories of psychopathology. The main objections to the validity of these memories are: (1) That it is impossible for anyone to remember as far back in life as the first or second year. (2) That it is inconceivable that a child could have such thoughts and experiences as are ascribed to him.

It is suggested, therefore, that these visualisations are pure imagination, or have been suggested by the analyst. From one point of view, it does not matter very much whether these early experiences are true or not—provided that the patient gets better. But whilst from the therapeutic point of view it is unimportant, from the points of view of systematic psychopathology and of preventive mental hygiene their truth or falsity is of considerable importance.

There is no a priori reason why memories of infantile life should not be recollected. If we can remember what happened to us at the age of three or four, there is no reason why we should not be able to retain experiences that go back to the age of one or two. An infant of a few days old not only recognises the breast of its mother, which may be regarded as an archaic characteristic, but it may also recognise its bottle, showing that it is capable of retention and memory. These facts confute any argument based on the lack of myelination at this early age. If the baby of a few weeks and months old can remember and retain its experiences, is there any a priori reason why that memory should not be reproduced in later life?

Spontaneous Revival of Infantile Memories.

A medical colleague vividly recalls a fire which occurred when he was eight months old. He says: "In the course of a conversation with my parents, when I was about six or seven years of age, I was told that the house in which I was born had caught fire and had been completely destroyed when I was eight months old. Immediately this was mentioned, I said, 'Oh, yes! I remember.' This was ridiculed by my parents, who informed me that, as I was only eight months old at the time, this memory was quite impossible. However, I said, 'But I do remember, and I can tell you something more about it!' I then proceeded to describe a circular staircase coming round a circular wall, and at the top of this staircase was a landing lit by a window. The window had frosted glass in the centre with coloured panels at the sides. I described the whole place lit up—flames licking the glass panels, which were cracking with a noise like the reports of a pistol. My parents said, 'Yes, that is perfectly true,' but added that I must have imagined it. Since that time I have never seen any photographs of the house, which was completely destroyed. These details were corroborated by both my parents, who said that the fire had reached considerable proportions by the time we had reached this landing, and that within five minutes the whole staircase and floors of the house had collapsed."

We cannot, of course, absolutely exclude the possibility of leakage of information in the interim; but not only did the patient have no recollection of this, but in any case the account would not have included such unimportant details as the frosted glass and coloured panels. Moreover, we should expect, on physiological grounds, that an experience so emotional would produce a lasting impression upon the child's brain.

Memories Recovered by Free Association.

We may group the memories obtained by free association in analysis into three classes: (*a*) Those for which we can

obtain objective evidence. (*b*) Those for which there is no objective evidence, but which are corroborated by similar conditions observable in childhood. (*c*) Those which persistently emerge in analysis and yet can neither be objectively proved nor corroborated.

A man of about 23 was sent to the writer as a case of "bronchial asthma," with a spasmodic cough, choking and feeling of suffocation. In free association—in this case under hypnosis—he recovered an experience as a small child in which he was ill in bed and his mother put something under his face, the fumes of which nearly suffocated him. In reviving this experience he had an attack of suffocation. He had remembered nothing of this incident, nor indeed did he remember it as having actually occurred even when he had experienced it in analysis. I asked him to write to his mother and ask simply whether anything had occurred in childhood in which he had been nearly suffocated. She replied that when he had had whooping-cough she had, as a domestic remedy, put some Friar's balsam on a hot shovel to make him inhale it. But the shovel had been too hot and she thought she would have lost him with the attack of coughing and suffocation which it produced. She added that the green bottle she had used still stood on her kitchen shelf. She said that he must have been under 2¼ at the time, because they had left the house in which the incident occurred when he was that age.

The points to note in this case are that we have objective verification of the truth of the experience; and that, curiously enough, although the patient reproduced this true experience, he had no knowledge nor recollection of its truth even after he had recalled it. Two further proofs of the truth of the story are that in recalling it he felt the whole experience vividly, and that the reproduction of the experience cured him of his asthma.

It stands to reason that only a very small proportion of the "memories" revived from childhood can be objectively verified because of the absence of parents and others who could verify them; because most of the experiences are subjective and therefore cannot be confirmed; and because the most important of these experiences are not only subjective but repressed.

Memories which are Probable but not Verifiable.

The second group are those which we have no means of verifying objectively, but which, nevertheless, may be corroborated by similar experiences commonly observed in child life. This is perhaps the most important and reliable method of determining the truth of our theories as to the origin of the psychoneuroses. All the symptoms of psychoneuroses—hysteria, anxiety states, obsessional fears and neurasthenia, as well as the perversions—may be observed in the normal child. The theories of Freud, of Jung, and of Adler all emphasise the importance of infantile experiences in the production of later abnormalities. It is natural, therefore, that we should look to early childhood itself to determine, first, whether these feelings and thoughts exist in children; and, secondly, whether they are found actually to give rise to the psychoneuroses. A patient says: "I feel myself at the breast sucking comfortably and warm. Then some thing seems to happen, something terrible, like an impending disaster." (Pause.) Pressed to continue, he says: "Well, something ridiculous comes to my mind. I get a taste of blood in my mouth, and then the thought of myself biting my mother—but that can't be true, a baby of that age has no teeth to bite with."

A picture of that kind gives very strong evidence of truth. We may, or may not, get objective evidence for it, but in spite of the patient's disclaimer, we know that such things do frequently happen in infancy, and indeed may necessitate weaning. The very scepticism of the patient as to the possibility of the memory, which is not merely unexpected and actually discredited, but also repugnant to him, adds credence to it.

In hypnosis and in free association there sometimes emerge images representing the emotional experiences of birth. Darwin long since pointed out that the newly born animal expresses all the emotions of fear. Such experiences, as we should expect, seem to leave a lasting impression on the brain, and under special conditions, such as hypnosis, can be reproduced. A patient in a hypnoidal condition suddenly goes off into a state of anxious dread and then begins to experience and describe her feelings just after birth when, as a matter of fact, she was left as dead. She proceeds: . . . "Then all of a sudden somebody snatches me up—falls down on me and takes me up. It is a horrid moment—it came so suddenly. Then it shakes me and I get so frightened and I try to get away from it and try to resist it and I am so terrified! They are *slapping* me. It isn't the pain of it, but the harshness of it—their cruelty. Then I begin breathing and it makes me terrified. I don't think I wanted it. Instead of that greyness, it is all red now, and there is a *terrific* noise everywhere—noise like many waters rushing—terrific noise—no rest, no peace, and they still go on shaking me. Somebody is holding me with a very hard hand, like claws—one on each side of it—so still and cold and cruel and merciless. Then I try to get out of it, *but they are holding me in mid-air—upside down.* But that can't be true; they don't hold babies upside down!"

After the analysis of this experience, I said to her: "Do you not know how they revive infants when they are not breathing after birth?" She said: "I have no idea." I said: "They sometimes take them by the feet upside down and smack them." She said: "Surely that is very cruel!" I replied: "But they think it does not matter because the child has no cutaneous sensations." She said: "But that is just what I experienced; there was no pain at all; but there was terrible shock which made me feel dreadful terror."

It is interesting to note that some obstetricians used to teach students never to slap the new-born child because of the additional shock this inflicts.

Memories Without Reasonable Corroboration.

The third group of memory images are those which can neither be objectively verified nor corroborated by a direct observation of child life, and yet should claim our attention on other grounds, especially their frequency and persistency.

A patient felt very sick when she arrived in the consulting-room—a sickness which had come on after the previous analysis. Told to associate on this feeling, she said: "It's something to do with breasts. Something made me feel that mother's breasts were repulsive. I've got an idea of it now—oh! I hate telling you! Something about this enema business. When I was lying waiting to have it done—I was on the bed—mother must have gone out for something and left me lying there. I'm wondering whether father came—or he was there. Oh! I don't know how I can bring myself to say it—and while I was amusing myself playing with my body—father came up and looked at me in a smirky kind of way. Then he felt me all over, too. He gave me a good deal of pleasure. . . . Something happened one night when she was feeding me. (Feel that.) Father came in and he was in a nasty temper. She said: 'You're drunk'—something in the word 'drunk' used to make me shudder. I used to have nightmares of drunken men coming down on the house. He probably seized her breast and tried to stuff it up against my face. (Movements of repulsion, turning over in distress.) And he said: 'Feed your brat.' Then he called her nasty sort of names—'old cow' and 'bitch,' and mother was terrified and was crying. When he went away she tried to make me finish—to keep on—and that is what made me feel sick. She is trying to put the breast to my mouth. I'm frightened and disgusted and I'm sick—I vomit. Then mother gets fussed because I'm sick over everything." (Patient now much more relieved in tone of voice.)

From the scientific point of view, these pictures are, of course, not on such secure ground as those which can be confirmed, or corroborated by our knowledge of child life, and should be accepted with greater reserve. The main possibilities of such a "memory" are: (1) that it is entirely and literally true, an exact reproduction of the thoughts and experiences of the time; (2) that the whole thing is pure imagination; (3) that it is a real earlier experience, read and interpreted in the light of later experience.

(1) Many of the visualisations in free association admittedly have no objective relation to fact, and no analyst claims that all these pictures are literally true. That should be sufficiently obvious to those who remember that Freud himself discovered long ago that the supposed sexual traumata were not always objectively true, but often turned out to be sexual phantasies.

Sometimes the pictures are symbolic, as when a girl sees herself at the age of 3 in a field of corn and all the heads of corn burst into flame. Again, there are corrections, as when a patient sees herself as a child petting and comforting a doll, and afterwards realises that it was not a doll, but herself, she was comforting. Again, there may be pictures which on the face of them are contradictions—as when a patient sees himself as a child of 2 in a garden where he did not live till he was 5. In such cases, however, it nearly always turns out that the picture is a composite one, combining two experiences of similar emotional tone. Obviously, then, all the pictures in analysis cannot be accepted as literally true.

(2) Nor, on the other hand, can we accept the easy explanation that they are all false.

The first evidence is that of subjective conviction. There is a warmth and intimacy about such experiences which is not present in others. Patients "remember" then as we remember the events of yesterday, and analytic memories should carry at least the same weight of conviction as those of ordinary life.

Another striking feature of the recovery of early memories is the extraordinary emotional tone in which they are revived. The feeling of intense cold, of horror, of anger

is impossible to convey in print, but commands conviction. A case in point is that of a man suffering from a sexual fetichism. In analysis he was carried back to the sensuousness of infantile life. In recovering this experience he became so dissociated that he started to go through all the movements of sucking and continued for two or three minutes. Then he had a short rest and started again and went on till he had had his ten minutes' feed. He then fell back, as it were, with the bloated appearance of the gratified infant. This experience happened on two or three occasions, and after each he would emerge again into ordinary conscious life with a look of surprise. In this mental phase he had completely returned to the feelings and actions of infantile life. The fetichism was directly connected with this experience, and was a symbolic representation of it.

Production and Cure of Symptoms.

During the course of analysis, new symptoms arise. The patient comes feeling quite gay and cheerful, but in the restoration of some buried experience he begins to get depressed, to feel hatred, acute nausea, headache, or any other physical symptom for which he is being treated. One patient, recovering a memory of fear, gets an intense ache in her jaw and neck; another feels so sick he needs a receptacle. Another patient finds herself compelled to make kissing movements the whole evening after treatment. Nor is this a matter of chance, for each time we recover that incident we elicit the same response. Like the dentist probing a tooth, we touch one spot or complex which brings the symptom to the surface. The law of cause and effect compels us to connect the original incident and the present symptom.

The elucidation and liberation of these early incidents brings about cure—a "cure," of course, being for our purpose merely one form of reaction.

A patient was suffering from severe abdominal pains and tremendous distension, so acute that if she ate any food after dinner she was unable to sleep at all owing to the distension. She had, of course, had her appendix removed, but without effect. Ultimately she came in analysis to an experience of infantile life when her mother, usually very tender and gentle with her, appeared to be bathing her very roughly, which made her annoyed and angry. Her mother then gave her her food out of a bottle in a rough way so that the child was unable to digest the food and suffered from very severe wind. It was the acute pain and distension of this that in after years reappeared as her hysterical symptom. When the patient realised that this roughness on her mother's part was not due to any lack of affection, but probably to the fact that the father had recently become a drunkard and the mother was probably impatient to go out and bring him back from the public-house, the symptoms entirely disappeared and have now been absent for some years.

The cure of the symptom cannot be the result of mere suggestion, for in many cases actual suggestion had been tried in vain, and many other similar experiences were revived without effect before we came to the particular one, which, when liberated, left the patient cured for good.

(3) The third possibility is that these pictures are a mixture of real infantile experiences with later interpretations, which may be true or false. A difficulty in the acceptance of such infantile memories is that both in form and substance they seem to be alien to what we already know of child life. They are expressed in language so sophisticated and consist of thoughts so complex and elaborate that it is difficult to believe that they can be reproductions of childhood experiences. In a case mentioned, the patient, remembering what happened in her first year, says, for instance: "While I was amusing myself playing alone with my body, father came up and looked at me in a smirky sort of way." How can an infant understand what a "smirk" is? How, in the birth phantasy, could an infant know that it was upside down? How could it know what strangulation meant? It is quite true that a baby cannot know these things, but it can feel them, and these experiences may leave a deep impression on the mind. A baby, it is true, cannot know that it is upside down, because for a baby there is no "up" and no "down"—in which it proves itself a better philosopher than we—but a child can feel that it is upside down, and soon lets you know it. A child may not know what bitterness is, but it can taste bitterness. A child cannot know that it was strangulated, but it can feel strangulation, and the reproduction of this feeling was actually experienced.

A large part of our difficulty disappears if we keep in mind these facts: (1) That a child's mental experiences consist almost entirely of undifferentiated feelings which only later become differentiated into thoughts. (2) That it is possible to reproduce feelings as well as thoughts. (3) That if these feelings are to be expressed at all in later life, they must be expressed in language which is necessarily sophisticated and mingled with a certain amount of interpretation, true or false.

The Nature of a Child's Experience.

The mind of a child probably consists of vague and undifferentiated feelings—longing for food, craving for gratification, feelings towards its mother. It is only later that these become differentiated out into thoughts Thoughts, as Conrad says, are the shape that feelings take, and the child has feeling experiences even when it cannot shape these feelings into thoughts. These feelings are very complex and complete, and contain all the embryonic material which will later find shape. The simple infantile experience of crying when thwarted in its desire to be at the breast is simple and undifferentiated; it is just one experience. We may, nevertheless, find in it elements of several forms of mental experience. There is anger; there is misery; there is sensuous desire; there is hope; there is despair; there is effort; there is abandonment and futility. The experience itself is simple and undifferentiated, but as he recalls this experience and revives the feeling in later life, the patient may analyse it and find in it all these elements. I would venture to say that there is no feeling or emotion of the adult which the infant is not capable of experiencing. The difference between the infant's mind and that of the adult is that in the former these feelings are vague, crude, and undifferentiated, whereas in the adult they are differentiated and formed into definite cognitions. A child can experience where it cannot understand; it can feel where it cannot discriminate; it lives by its feelings, not by its thoughts. In this way, a child appears to be extremely sensitive to the moods and feelings of those around it. The child can easily feel the anger of its father without being able to think, "there's father upset again!" It can feel jealousy towards another child without being able to discern that "the other child is standing in my way." A child can cling to its mother for protection without being able to realise "if I get separated from her it's all up with me!" The infant is terrified by noise without being able to recognise that noise spells danger. An infant may hear the sound of a word, such as "drunk" (in our illustration), and retain it, with considerable emotional tone, without the word being really understood, and yet the reproduction of the word would reproduce the unpleasant feelings associated with it. The failure to appreciate the way in which a child feels experiences, even when it cannot understand them, has led to pitiable blunders on the part of parents, who permit their children to witness sights and undergo experiences on the ground that they are "too young to understand." Undoubtedly, they are "too young to understand" the whole significance of such acts, but they are not too young to feel, and experiences that are not in the least understood by a child may produce violent commotion in its soul. Indeed, it is very often these experiences which, for the very reason that they are not understood but strongly felt, produce such a profound effect upon the mind. If we remember this we can realise how it is possible for these experiences which come up in analysis to be real experiences of early childhood, even though the thoughts into which they are differentiated, and the language in which they are expressed, belong of necessity to a later age. This view is supported by anatomical observations. In the year-old child the thalamus, the centre of affect and emotion, is active, whereas the cortex, the centre for more discriminative thought, is probably not in full function.

Translation of Feelings into Language.

Memory is conscious reproduction, and it is just as possible to reproduce a feeling in consciousness as it is to revive a thought. A patient can revive a feeling of depression and give vent to a fit of sobbing without reference to any present cause of cognitive content. This is precisely the way in which pictures often come in analysis; first the feeling and then the cognitive content. The infant, of course, cannot express his feelings in any other way than by emotional expression. The adult, on the other hand, recovering these same feelings in analysis may at first be incapable, like the child, of doing anything but feeling them, but later he becomes capable of putting the feelings into words. The result may be a perfectly true interpretation of his infantile experience, though the language and thought is far too sophisticated for a child to enunciate or even to think. The argument, therefore, that these memory pictures of childhood are not true because they are much too sophisticated is not conducive, for the child undoubtedly has feelings and, if feelings are to be expressed at all, it must be by words. In that transformation of the early experiences into adult thought and language there is, of course, always an element of interpretation, analagous to the secondary elaboration which takes place in dreams. We are faced with three possibilities: (1) A simple and accurate translation of these feelings into language. (2) Interpretation in the light of later experience, and the interpretation, nevertheless, may be a correct explanation of the feeling. (3) Incorrect interpretation too much influenced by later experience.

When the child feels a sense of awful dread in infancy and the adult expresses this in analysis, he is merely translating real feelings into words. In the incest phantasy, we may assume that the child is not conscious of any knowledge of sexual intercourse any more than it is aware of the idea of hunger or of death. This may, nevertheless, be what it feels and desires—an archaic feeling handed down with its physiological inheritance—if it could put its wishes into words. That is one view of the case.

In the second place, it may be that the child has certain feelings which we know and understand to be inherently sexual, and we may be right in so interpreting them. The girl, in later adolescence, may have cravings and desires of which she does not understand the nature, but which are quite clearly sexual and which she later recognises as such. We should be quite correct in so interpreting them. So the child may have precisely such feelings and cravings, and we may be quite right in interpreting his cravings as sexual. These feelings would not be understood at the time, but the adult patient, recovering the experiences, would understand and interpret them in the light of later experience.

On the other hand, it may be that the sensuous experiences are true, but the interpretation is false. It may be that the child has certain experiences of a sensuous kind which may be really egoistic, but, because they are so similar in feeling to later sexual feelings, they are wrongly interpreted as sexual.

This question of the interpretation of early experiences is a very important one, because upon it depend the various schools of psychopathology. There is a certain agreement as to the facts, as there must be to those who get free association in childhood, but the schools differ on how those facts are to be interpreted. I have little hesitation in saying that the greatest pitfall into which the analyst is likely to fall is the so-called "psychologist's fallacy"—namely, reading into a discovered experience his own thoughts and interpretations. The risk comes from the patient and from the analyst. The analyst may read into the patient's experiences his own interpretations and theories, but the patient himself may commit the psychologist's fallacy in ascribing to his own early experiences the interpretation of a later day.

Conclusions.

The foregoing considerations encourage us in the belief: (*a*) That it is possible to recover in memory experiences of infantile life—nor is there any reason why we should not. (*b*) That confirmation of these experiences can be found not only in objective verification, but in corroboration, and by the effects of the revival of these experiences. (*c*) That many of these early experiences, whilst themselves true, may become distorted by interpretations of a later time.

It is therefore only as we investigate, by direct observation and much more thoroughly than we have yet done, the actual behaviour of infants and children, that we shall be able to divest these memories of their accidental accretions and unfold the mind of a child as it really exists, a need of fundamental importance, whether from the point of view of psychopathology or of preventive mental hygiene.

"PORTIA" NON-FLAM. EYE SHADES.

WE have received from Messrs. Solport Brothers, Ltd., 184-190, Goswell-road, E.C. 1, specimens of their "Portia" Non-Flam. Eye Shades. These are made in three shapes—namely, for right eye, left eye, or either eye—from semi-opaque material, pink lined green, and also from green transparent material. The severe tests to which we have put the shades show that it is not strictly accurate to suggest that they are non-inflammable, but it is only under conditions not likely to occur normally that the material can be made to burn. The shades are certainly an improvement on those made from celluloid, both in utility and appearance.

DALRYMPLE HOUSE.

THE Forty-fourth Annual Report of Dalrymple House for Inebriates at Rickmansworth shows that Dr. F. S. D. Hogg's successful work is being maintained. Sixty-four patients were admitted during 1927, eleven of them under the Inebriates Act. All were alcoholics except for one morphine and two heroin addicts. Nearly all, including three sufferers from delirium tremens, made good recoveries. The average period of residence was seven to eight weeks for private patients and 23 to 24 weeks for those under the Act. The percentage of good results steadily increases in a ratio corresponding with the length of stay; this is, of course, partly due to the early discharge of patients unsuitable for treatment, but those who stay longest are often borderline, mentally deficient, and chronic cases for whom little can be hoped. Dr. Hogg points out that time is an essential factor in the treatment of any addiction and is closely associated with those elements of habit, self-suggestion, and self-education that play such an important part in the cure. The length of time that will strike the happy medium between staleness and discharge whilst still unstable must be a matter for careful individual consideration in every case. In an interesting statistical appendix Dr. Hogg gives particulars of discharged patients, relating to their age, previous residence, occupation, temperament, habits, and history. The report is illustrated with a number of photographs of the beautiful grounds.

THE SURGERY OF YESTERDAY AND TO-MORROW.

To the Editor of THE LANCET.

SIR,—As reported in THE LANCET of June 9th, p. 1207, the address of the President of the Royal College of Surgeons of England delivered at Addenbrooke's Hospital, Cambridge, savours somewhat of the utterance of the Pharisee who was not as other men. If the conditions prevailing in a Leeds operating theatre, 40 years ago, as described, were typical of English surgery generally they were bad. If not typical then Leeds must have been a curious centre.

My memory recalls the state of affairs in the Glasgow Western Infirmary, 50 years ago, soon after Lister left Glasgow, and while his teaching, and carbolic spray, were in the ascendant. Scrupulous cleanliness was then the order of the day, both with surgeons and dressers, supplemented but not replaced, by the all-penetrating spray. Coats or jackets, which may, or may not, have been stained were substituted for out-of-door "frocks," but they never appeared like the disreputable old coats gloated over by Leeds surgeons. There was almost an odour of sanctity in the theatre when the operating surgeon entered, looking like a bishop, with his working jacket protected by a white apron, and the jacket sleeves hidden by freshly laundered white sleeves, which closely gripped the arm just above the wrist and extended well over the elbow. This surgical equipment probably foreshadowed the later development of sterile overcoats, and may have been the outcome of Lister's influence. At any rate, Glasgow must have been years ahead of Leeds in the matter of its ablutionary technique. Bacteriology was then unknown, but *vis medicatrix naturæ*—the patient's power of resistance—was ever kept in view and wisely so.

I am, Sir, yours faithfully,

Scarborough, June 10th, 1928. JOHN IRVING.

To the Editor of THE LANCET.

SIR,—The following quotations may interest some of your readers:—

1. Erichsen, Science and Art of Surgery, tenth edition 1895 (seven years after the introduction of Lister's antiseptic surgery), p. 2. "When we reflect . . . we can scarcely doubt that the limits of surgery have been nearly reached . . . The surgeon of the future can scarcely hope to invent new operations; he must be content to modify and perfect those that have been devised by the genius and skill of his predecessors. . . . But if the mechanical art of surgery has attained to so high a degree of perfection that we can scarcely hope for much further progress in that direction, the case is widely different with the science."

2. Sir Berkeley Moynihan, at Cambridge, June 1st, 1928 (as reported in THE LANCET, June 9th): "The craft of surgery has to-day reached something near its goal. If operations have to be practised in the future, it is not possible to imagine any considerable improvement upon the methods and results of to-day, as exemplified in the hands of the great masters. . . . The art of surgery has outrun its science."

I am, Sir, yours faithfully,

London, W., June 11th. A. S. BLUNDELL BANKART.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A public meeting of the Council will be held on Thursday, June 21st, at 5 P.M., in the Council Chamber, Birmingham. Addresses will be given by Sir Maurice Craig and Dr. Crichton Miller on the Prevention of Nervous Breakdown.

BRITISH HOSPITALS' ASSOCIATION.—The eighteenth annual meeting and conference of the Association will be held at Southport on Thursday and Friday, June 21st and 22nd, under the presidency of Sir Arthur Stanley. On Thursday morning Sir Thomas Horder will read a paper on the Place of the Voluntary Hospitals in Relation to Health Services, and in the afternoon Mr. G. Q. Roberts, secretary and receiver of St. Thomas's Hospital, will speak on Problems of the Voluntary Hospital of to-day compared with Problems of the Past. A discussion on the Place of the Nurse in the Hospital will be opened on Friday morning by Miss M. E. Sparshott, and in the afternoon visits will be paid to hospitals and other institutions. The conference secretary is Mr. J. H. Shaw, Southport General Infirmary, Pilkington-rd., Southport.

Croonian Lectures

ON THE

INTERPRETATION OF GASTRIC SYMPTOMS.

Delivered before the Royal College of Physicians of London

BY CHARLES BOLTON, C.B.E., M.D., D.SC. LOND., F.R.C.P. LOND., F.R.S.,
PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL.

LECTURE III.*

(Delivered on June 12th.)

I HAVE classified the symptoms of functional disorder of the stomach into three fundamental groups or syndromes and connected each group with a different part of the gastric mechanism. I shall now consider what alterations in this mechanism are responsible for the production of these symptom groups and what are the causes of these alterations.

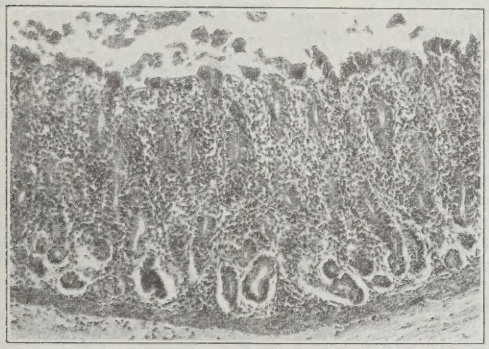
A. PYLORIC SYNDROME.

The changes producing this group of symptoms are due to irritability of the pyloric sphincter which produces its effects in the later stages of digestion when the stomach is partially empty and its contents are most irritating. The normal relaxation of the sphincter is interfered with and ultimately it becomes spasmodic, the spasm involving the pyloric vestibule or only the end of it; its two functions whereby it acts as regulator of the output of food and of the acidity of the gastric contents are upset, so that delayed emptying of the stomach and hyperacidity of its contents result.

Causes.

1. *Indigestible and Irritating Food.*—The normal movements of the pyloric sphincter are effected by local reflexes through the myenteric plexus. It is

FIG. 1.



Section of monkey's stomach showing gastritis. There is round-celled infiltration of the mucosa and destruction of the gastric glands (HCl experiments).

not thoroughly understood how this is accomplished. The character of the food is probably one of the chief factors, for the pylorus has undoubtedly a selective action. It separates the fluids from the solids and holds up those portions which require further disintegration. The constant ingestion of food difficult to disintegrate, particularly if bolted and containing irritants, leads to deficient relaxation of the pylorus through excessive irritability, which, once established, tends to persist.

2. *Hyperacidity of the gastric contents* resulting from this pyloric hypertension or hypersecretion increases and maintains the pyloric irritability and finally produces spasm, for Cannon [1] has shown that the HCl of the gastric juice is at all events a factor in the control of the pylorus, so that there can be no doubt that the myenteric reflex responsible for this control is very sensitive to HCl, and in the presence of an excess produces pyloric spasm when it is irritable.

3. The facility with which these effects are produced depends upon the condition of the nervous system as regards stability. There are three conditions which tend to render unstable the reflex mechanism controlling the pylorus.

FIG. 2.

Section of monkey's stomach showing an enlarged follicle bursting on the surface and forming a follicular ulcer (HCl experiment).

(*a*) A direct effect upon the *myenteric plexus* itself. This effect is produced by a *chronic ulcer* situated in the pyloric vestibule, especially if near the pylorus, or a duodenal ulcer. An acute ulcer, although there may be nerves exposed in its base, produces no characteristic symptoms; it is the chronic ulcer which acts as a focus of irritation to the part of the stomach in which it is situated. The wall of the moderately stretched stomach is only about 4 mm. thick, and it is therefore rapidly destroyed during the formation of an ulcer. The muscular coat retracts in all directions and the base of the ulcer is formed of newly formed fibrous tissue or some adjacent organ. There are no nerves in this base to be irritated by the gastric contents except such extrinsic nerves as may by chance be caught up outside the stomach. The fibrous base of the ulcer extends in all directions into the surrounding wall of the stomach between and involving its coats by a slowly progressive type of chronic inflammation; it gradually infiltrates the myenteric plexus and the endings of the extrinsic nerves, and it is only reasonable to assume that it acts as a focus of irritation to the plexus, whose function is to coördinate the movements of the different parts of the stomach. It is not common for a *cancer of the pylorus* to produce this effect, although now and again such an event occurs.

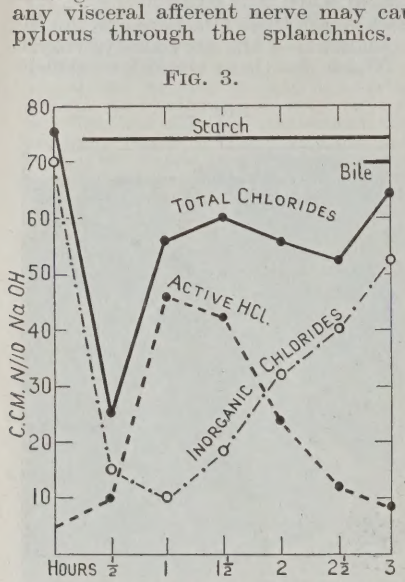
Pyloric gastritis is held by Faber, of Copenhagen,[2] to be a cause of pyloric symptoms, because he has found this condition in the resected parts of patients who have been operated on for supposed ulcer, and who showed pyloric symptoms. He is doubtful, however, how often hyperchlorhydria can be referred to gastritis. Gastritis in this position is common enough, and I suggest that it may be a secondary result of the hyperchlorhydria. In 1915 [3] I was able to produce gastritis and follicular ulcers by feeding monkeys daily with HCl solutions of 0·28 per cent. and upwards (Figs. 1 and 2). In no case did the ulcers show any tendency to extend or become chronic. So that the primary event may be pyloric irritability or hypersecretion, and the secondary results hyperchlorhydria and gastritis.

(*b*) The second condition which renders the pyloric mechanism unstable is *reflex irritation*. According to Cannon's [1] experiments of intestinal section and irritation of the colon pyloric hypertension should result from disease of the bowel as a reflex effect. Moynihan [4] first described pyloric spasm, that is to

* Lectures I. and II. appeared in THE LANCET of June 9th and 16th respectively.

say of the sphincter, and also the pyloric vestibule, as being secondary to appendicitis, and Cole [5] and Barclay [6] were early X ray observers who noted the same condition as the result of various conditions in different parts of the bowel by the X rays. Since this time numerous later observers have described similar findings. Carlson and Litt [7] find that stimulation of any visceral afferent nerve may cause spasm of the pylorus through the splanchnics. In the present state of our knowledge regarding this difficult subject we must conclude that reflex irritation from some other part of the alimentary system is a cause of pyloric irritability.

FIG. 3.



Normal curve of total chloride, inorganic chloride, and active hydrochloric acid.

(*c*) Finally, any condition rendering the *central nervous system unstable* is a factor in contributing to produce pyloric irritability. The effects of neurasthenia and other forms of nervous disorder, however, are much less marked upon the pyloric sphincter than upon the body of the stomach, and are not so often a primary cause of the disturbance, although once established they no doubt perpetuate it.

Effects Produced.

Whatever is the primary cause of the pyloric irritability is a matter of little moment; the effects produced are the same in each case.

1. The pylorus is first interfered with in its capacity as *regulator of the output of food.* When the stomach is filled with food the pylorus assumes its condition of postural contraction, whereby it locks the food in the stomach and yet there is no increase in the contraction tension of its muscle fibres. Expulsive peristalsis begins at once about the middle of the stomach and from this point waves pass over the pyloric portion without ceasing, and increase in vigour as the stomach empties. These waves deepen towards their termination, a constant central stream of gastric contents flowing backwards, and the deeper the waves the more forcible the velocity of this backward current. The pyloric sphincter in its state of postural tonus determines the rate at which food leaves the stomach. It does not relax before every peristaltic wave, neither does it always relax to an equal degree. At the beginning of digestion it relaxes just enough to allow liquids and finely divided solids to pass out, pieces of food difficult to disintegrate, hard masses, and irritant material are shot back into the pyloric vestibule to undergo further softening and subdivision. In this way the pylorus exhibits its function of selecting properly prepared food—namely, that in solution, finely emulsified and disintegrated, and partially digested to be passed on to the intestines. The different foodstuffs leave the stomach at different rates. The pylorus may hold up indigestible material for a considerable time, because it is a common experience for patients to complain that they have vomited easily recognisable articles 24 or more hours after ingestion, although they have eaten other food in the meanwhile which has passed out of the stomach; or such indigestible residue may be washed out after everything else has left the stomach

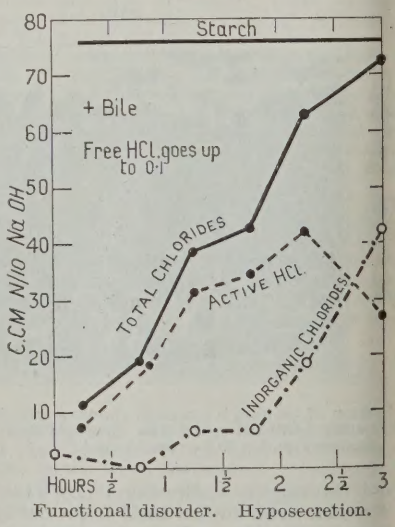
The gastric contents thus become more irritating as digestion proceeds, because the soluble and easily disintegrated food has passed out of the stomach, leaving the more irritating portions behind mixed with gastric juice. If food difficult of disintegration or irritating is eaten the factors tending to bring about pyloric relaxation become less effective as digestion proceeds; the pylorus refuses to relax and finally becomes spasmodic. Whether the pylorus is initially irritable or becomes so as the result of irritating food during digestion makes no difference. The result is the same. Peristalsis increases in vigour as in the case of all opposed muscles, and the tonic contractions of the body become more pronounced, so that the internal pressure is raised, and finally the pyloric vestibule becomes spasmodic with the sphincter.

If the stomach has emptied rapidly at the beginning, so that when pyloric spasm comes on very little is left in it, these exaggerated movements of the body are of precisely the same nature as the normal hunger contractions of the empty stomach, and the pain experienced owing to the pyloric spasm becomes blended with an empty, hungry sensation. If the gastric contents are of considerable volume when the spasm occurs the feeling is one of fullness. In either case referred pain may or may not appear in the region representing the body. As the cardiac sphincter relaxes from time to time regurgitation of the acid contents occurs into the œsophagus; this is more likely to appear if the volume of the gastric contents is considerable, or if its occurrence is favoured by the position of the patient, or the intra-abdominal pressure. The usual result is that the fluid causes a burning sensation in the throat, is re-swallowed, and a few deglutition movements clear the œsophagus; or the fluid if it reaches the mouth is spat out.

The further changes in the œsophagus will be described later, but marked œsophageal symptoms or wind eructations are by no means very common in the pyloric syndrome as the patients have not as a rule any special neuropathic tendency. When food is eaten the symptoms are put an end to because the muscular movements producing them are stopped, as I have described in the last lecture, and the cause is removed — that is to say, the acid contents of the stomach are diluted and neutralised.

It was demonstrated by Carlson [8] that the hunger contractions of the empty stomach are inhibited by the introduction of food, the organ assuming its condition of postural contraction. Moreover the chewing and swallowing of food may also inhibit them. It is a well-known fact that immediate relief by food is best obtained in those cases of pain with hunger which occur when the stomach is relatively empty and also that quite a small amount of food, such as a biscuit, will relieve; in these cases also relief by alkalis is more complete. These two facts receive this explanation, in that inhibition is more effective when the stomach is almost empty, for the later the symptoms commence the less irritable is the stomach and the more easy to relax, and neutralisation of more importance since the HCl is an important factor in causing the spasm. Œsophageal symptoms in such

FIG. 4.

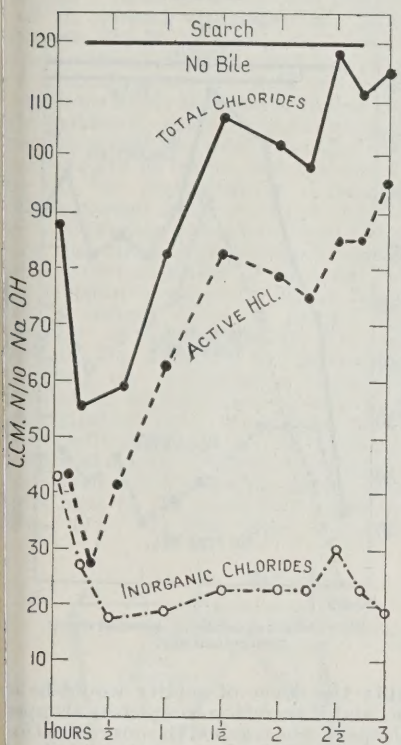


Functional disorder. Hyposecretion.

cases can usually be easily overcome by washing the œsophagus by swallowing water.

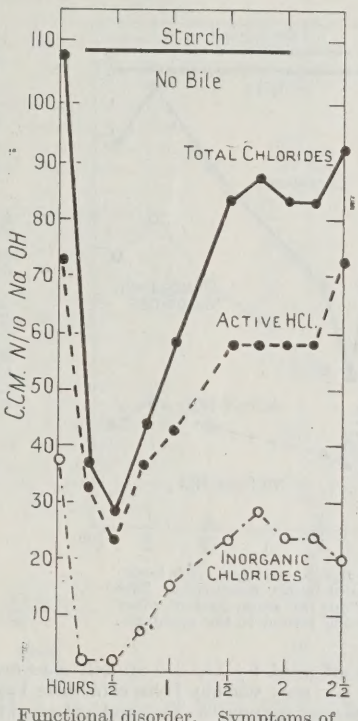
It is easy to understand the relaxation of the body and pyloric vestibule, but one difficulty presents itself, and that is why the pyloric sphincter itself is relaxed by food. If entirely dependent upon the acidity it will relax when this is neutralised, but it is probable that the sympathetic, which relaxes the stomach and closes the sphincter, is able to induce in the latter the through the myenteric plexus or vagus; and Carlson[7] has shown that pyloric spasm may be reduced by stimulation of the sympathetic. When the extrinsic nerves are the original cause of the irritability similar effects must be seen in a more irregular and complicated fashion. It is not so common for pyloric irritability to be directly due to instability of the central nervous system, but as a reflex effect through the sympathetic from other portions of the alimentary

FIG. 5.



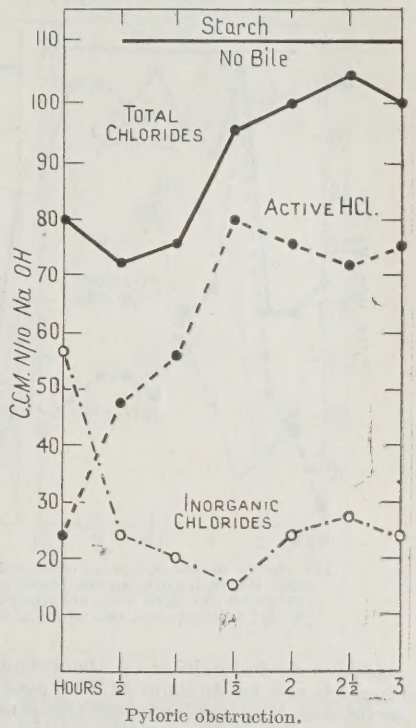
Duodenal ulcer.

FIG. 6.



Functional disorder. Symptoms of hyperchlorhydria.

FIG. 7.



Pyloric obstruction.

ondition of postural tonus when it is spasmodic. We o not really understand the precise action of the xtrinsic nerves of the stomach. The vagus is the notor and the sympathetic the inhibitory nerve; ut either will produce spasm or relaxation of either phincter. The result depends upon the strength of timulation and the stage of digestion, or the condition f muscular contraction at the time. If spasmodic a phincter will be relaxed, if relaxed it will contract Carlson). As the stomach is filled the vagus relaxes he cardia and body of the stomach during swallowing od so that pain is rarely experienced during the neal; during the emptying it increases the tone and eristaltic contractions of the stomach and tends to elax the pylorus, thereby increasing the emptying fficiency[9]; excessive stimulation causes spasm of ne pyloric and relaxation of the cardiac end.

So that in this condition of pyloric irritability due o improper food or local irritation as in duodenal lcer and starting as an excess of the local pyloric eflex through the myenteric plexus, the vagus reflex no doubt in many cases unduly excited and called to aid in the increased peristalsis and tone of the omach, but when excessively stimulated it induces, at all events increases, the pyloric spasm—that is say, of the sphincter and vestibule. In favour of is view is the early rapid emptying of many of ese stomachs, the hypersecretion which is not ncommon, and the effect of atropine in often relaxing ne sphincter. The action of the sympathetic, when od is eaten, is to inhibit these effects more or less ccessfully and to reduce the pyloric spasm to the ndition of postural tonus when it is due to overaction canal it is, as we have seen, common enough. In such a case relaxation of the sphincter by the sympathetic cannot be expected so that the symptoms would not be so well relieved by food, and in his original description of this reflex dyspepsia Moynihan points out that the gastric pain in this condition differs from that of gastric ulcer in not appearing so regularly at a fixed time after food and having no fixed interval of relief after a meal.

The final stage of this interference with pyloric action, which is seen on occasion, is one in which muscular insufficiency appears and the stomach shows slight dilatation. This condition, which may be recognised now and again by the X rays, is easily recovered from and causes little alteration in the symptoms. All the muscular disorders described above may be seen on occasion by the X rays, but a series of cases cannot be followed through from beginning to end, otherwise our difficulties would be at an end.

2. The next function of the pylorus to be interfered with is that of *regulator of the acidity of the gastric contents*. It accomplishes this by relaxing and permitting the regurgitation of alkaline duodenal contents into the stomach at a certain stage of digestion. As this process has recently been denied I must give a brief description of the foundations upon which it is based, and point out how its opponents have fallen into error.

The first observer to recognise bile in the stomach was Beaumont,[10] but no significance was attached to its presence till Boldyreff's experiments[11] clearly established the fact and demonstrated the importance

of regurgitation of pancreatic and intestinal juices and bile into the stomach. He showed this spontaneous regurgitation into the empty stomach of both the dog and man; also that regurgitation occurred when fats were introduced into the stomach by mouth or through a gastric fistula; and that regurgitation of these juices was brought about when large quantities of HCl or other acids were introduced into the fasting or digesting stomach. He proved conclusively that the introduced acid was neutralised by the pancreatic juice regurgitated, showing that the reduction of acidity was due neither to absorption of acid by the stomach nor to dilution of the acid by any watery secretion. He considered that this process of regurgitation neutralised the acidity of the gastric contents down to 0·15 per cent. to secure the optimum acidity for digestion by pepsin and to protect the intestine. He styled the process the "self regulation of the acidity of the gastric contents."

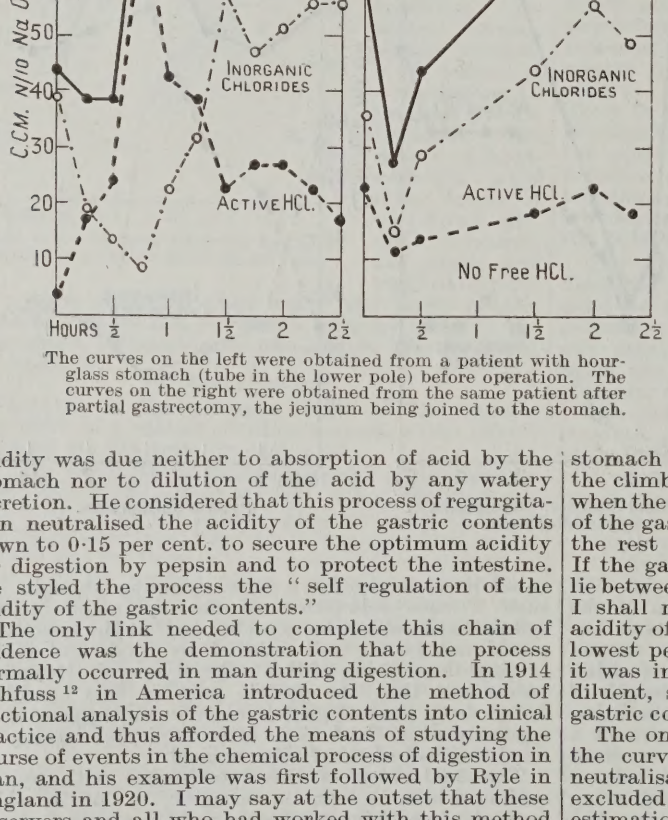
The only link needed to complete this chain of evidence was the demonstration that the process normally occurred in man during digestion. In 1914 Rehfuss [12] in America introduced the method of fractional analysis of the gastric contents into clinical practice and thus afforded the means of studying the course of events in the chemical process of digestion in man, and his example was first followed by Ryle in England in 1920. I may say at the outset that these observers and all who had worked with this method recognised the principle enunciated by Boldyreff of duodenal regurgitation. For example, in 1916 Spencer, Myer, Rehfuss, and Hawk [13] confirmed Boldyreff's findings of trypsin in the stomach, and in 1921 Rehfuss and Hawk [14] stated that during gastric digestion the pylorus shows heightened tonus with but little regurgitation, except that which is essential to maintain optimum acidity in the stomach, but that during the resting phase the pylorus relaxes, permitting a ready reflex of alkaline duodenal secretion. In the same year Bennett and Ryle [15] also subscribed to this theory of duodenal regurgitation, and concluded that the acidity of the gastric contents depends upon the balance between acid and alkali. Now according to the teaching of Rehfuss, the curves of free HCl and total acidity represented the course of gastric secretion. Isosecretory curves were those whose peak rose to a maximum of about 0·2 per cent. and comprised, according to Bennett and Ryle, about 91 per cent. of the total; hypersecretory and hyposecretory curves those which reached higher than or failed to reach the isosecretory level; if the curve did not descend or continue to rise, so that its highest point was reached when the stomach was empty, it was styled by Bennett and Ryle the "climbing type" of curve and occurred in about 5 per cent. of healthy people.

In 1921 Goodhart and myself [16] commenced the study of these curves. Our argument was that the curve of acidity of the gastric contents could not possibly mean the same thing as the curve of secretion. If secretion continued at the same strength till the stomach was empty the curve of acidity would be of the climbing type, and if secretion completely stopped when the top of the peak was reached the concentration of the gastric contents would remain at that level and the rest of the curve would draw a horizontal line. If the gastric juice fell off in acidity the curve would lie between these two levels. Rosemann, to whose work I shall refer later, had shown that such a fall in acidity of the gastric juice did actually occur; but the lowest percentage of HCl reached was 0·319, so that it was impossible for the gastric juice to act as a diluent, since the average height of acidity of the gastric contents was in the region of 0·2 per cent. HCl.

The only other condition which would bring down the curve of acidity of the gastric contents was neutralisation, for absorption of acid had been excluded as the cause. We made complete chloride estimations every quarter of an hour and found that as the acid curve went up that of neutral chloride remained low, and as the percentage of acid fell that of neutral chloride increased pari passu, the total chloride curve remaining unaffected (Fig. 3). It was also found that in cases of diminished secretion the total chloride curve was low (Fig. 4). We concluded that the real secretory curve was not the acid curve as described, but followed that of the total chlorides, and that the acid curve represented the progress of the neutralisation process only, which in its turn entirely depended upon relaxation of the pyloric sphincter at a certain stage of digestion, permitting of duodenal regurgitation.

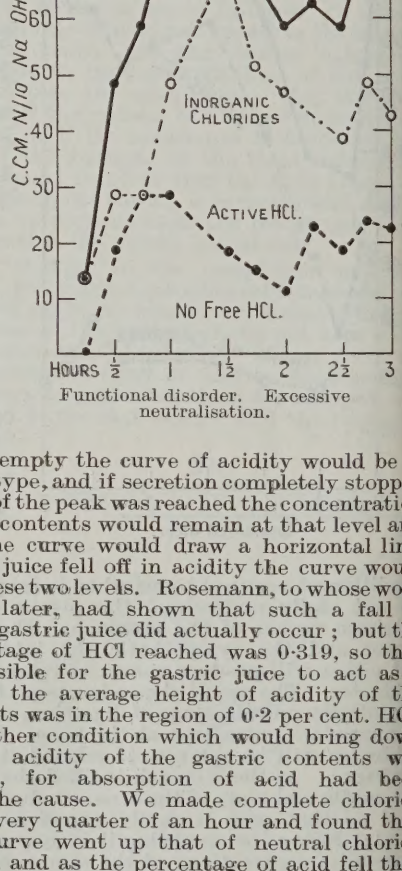
These results have been confirmed by Apperly,[17] by Baird, Campbell, and Hern [18] and by Roberts.[19] We have formed the definite hypothesis that in the condition of pyloric irritability the pylorus refuses to relax as described above at the usual time and the wave of neutralisation fails to appear. The further course of the curve depends upon the secretory

FIG. 8.



The curves on the left were obtained from a patient with hour-glass stomach (tube in the lower pole) before operation. The curves on the right were obtained from the same patient after partial gastrectomy, the jejunum being joined to the stomach.

FIG. 9.

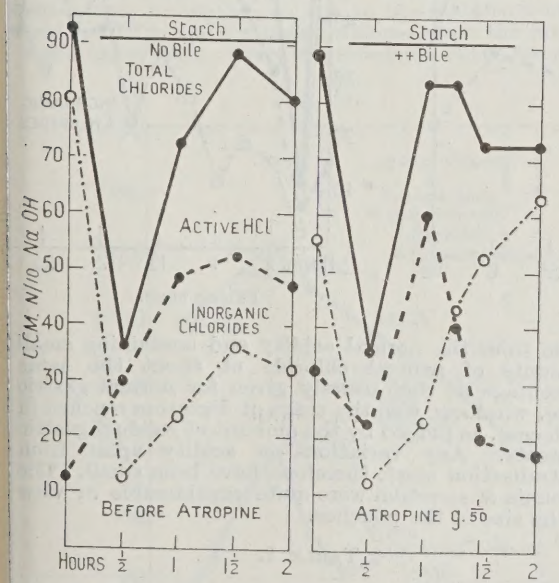


Functional disorder. Excessive neutralisation.

activity of the stomach and the behaviour of the pylorus. The acid curve may continue to rise as in the climbing type; or it may draw a horizontal line; or the pylorus may relax occasionally to different degrees and the acid curve fall with each relaxation to rise again as the pylorus tightens up. This in our opinion is the condition described as hyperchlorhydria or acid dyspepsia (Figs. 5 and 6).

We regard the following facts as being confirmatory of the conclusion at which we have arrived. (1) Bile appears in the stomach from the beginning in cases of excessive neutralisation, and frequently towards the end in normal neutralisation, although it is often absent. (2) In inorganic obstruction of the pylorus when regurgitation does not occur there is no evidence of neutralisation, the acid curve does not fall, but continues in its horizontal course (Fig. 7). (3) When the pylorus is cut out or gastro-enterostomy performed in such a case the total chloride curve remains of the same height as before, but achlorhydria is established by the free regurgitation of intestinal contents and bile is present in the stomach (Fig. 8). (4) In certain normal persons owing to excessive duodenal regurgitation the same condition of achlorhydria is established, with a normal height of the total chloride curve, and the constant presence of bile in the stomach (Fig. 9). (5) In certain cases of pyloric hypertension with absence of neutralisation the administration of atropine in addition to diminishing the secretion converts the climbing or horizontal curve into a normal one by dilating the pylorus and allowing a free regurgitation from the duodenum (Fig. 10). (6) In the condition of recovery from an attack of dyspepsia a normal curve obtained by the gruel meal may be converted into a climbing one by adding badly cooked split peas to the meal and so irritating the pylorus (Fig. 11). (7) The rapid ups and downs which

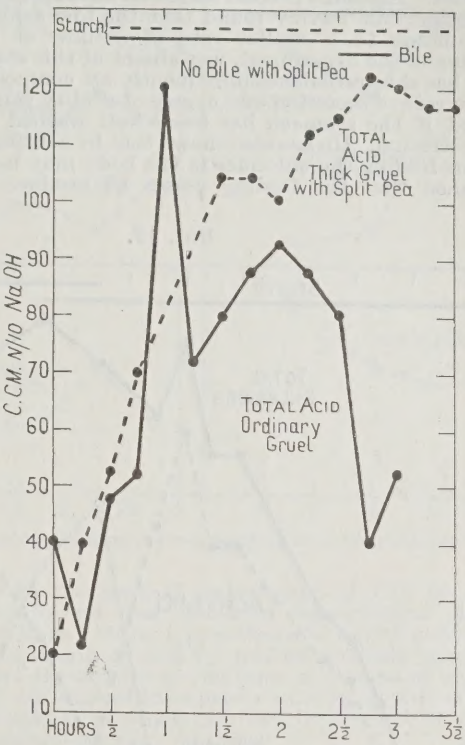
FIG. 10.



Curves obtained before and after administration of atropine.

sometimes occur in the curve can only be explained by the vagaries of a sphincter muscle (Figs. 12 and 13). In our original paper dealing with duodenal regurgitation we stated that the curve of gastric secretion followed the course of the total chlorides, but did not assume that the percentages of Cl in the two were identical. The reason for this was that we realised that the HCl of the gastric juice might not account for the whole of the total chlorides present, because no exact data were available as to the amount of Cl in each of the other secretions. Hansman, Day, and Clifton [20] in a recent paper have calculated that the total amount of Cl present in the gastric contents is at times greater than can be accounted for by the Cl in the gastric juice, assuming that there are present certain proportions of mixed secretions each of known Cl percentage, and that the Cl secreted by the stomach is always in the form of acid. They have concluded that the stomach allows the passage of chlorides through the mucous membrane, and that

FIG. 11.



Curves showing amount of acid in gastric contents after a meal of (*a*) ordinary gruel, and (*b*) gruel thickened with split pea. The split pea has converted the curve into a climbing curve, prolonged the emptying time, and prevented regurgitation of bile.

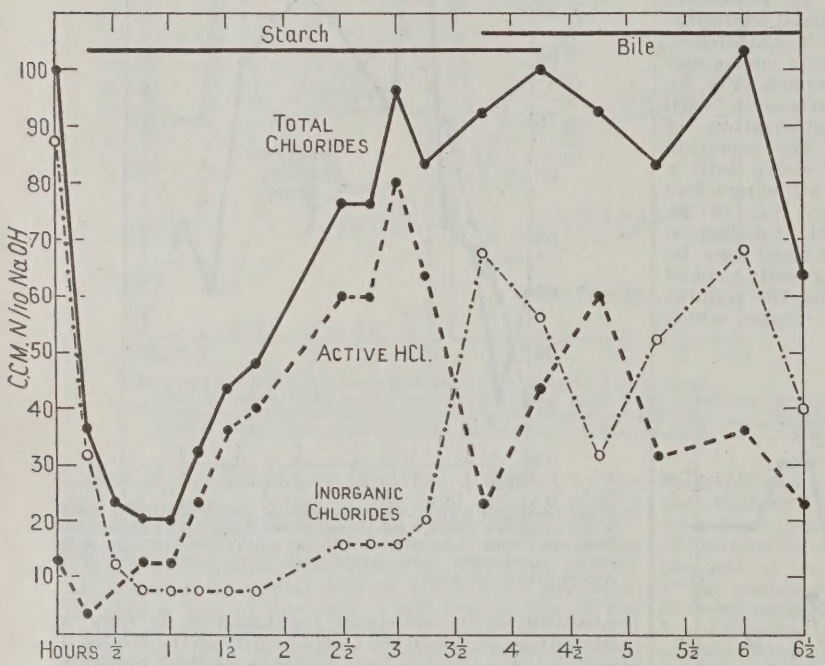
neutralisation by duodenal regurgitation is only a contributory factor to the fall of acidity as the stomach empties. The gastric cell receives neutral chloride from the blood and transforms it into HCl, so that there can be little doubt that neutral chloride at times escapes this transformation in certain pathological conditions, but the hypothesis that this escape normally occurs at a stated time as a purposive act to reduce the amount of HCl by neutral chloride is certainly not justified, especially since the data upon which they rely are uncertain. Apperly [21] has, moreover, found that the chloride strength of the duodenal fluids may be enough to account for these chloride variations without invoking the aid of the passage of neutral chloride through the stomach wall, which idea he dismisses. This is borne out by Baird, Campbell, and Hern.[18] Roberts,[22] from observations upon the fasting juice, finds that the hypothesis of secretion of neutral chloride best explains his results, but admits that this explanation is only tentative owing to the number of uncontrollable factors present. It is true that the gastric juice obtained from the Pavlov fistula fluctuates in its degree of acidity, and Pavlov [23] himself has definitely proved that this fluctuation depends upon the rate of flow of the gastric juice, and the time it remains in the pouch; and that the cause of the low acidity is due to neutralisation when small amounts are secreted. The neutraliser is the alkaline mucus coating the surface of the mucous membrane, so that at the beginning of secretion the small amounts of juice trickling from the gastric tubes are neutralised,

but this neutralisation process soon ceases to produce an effect as the secretion is fully established.

There can be no doubt that Pavlov is correct in his statement that the greater the quantity of juice the more rapidly will it flow over the stomach wall, and the less will it become neutralised, so that in the use of the Pavlov pouch allowance must be made for such variations in the acidity of the gastric juice when small amounts are secreted, because it has neutralising properties. The same process occurs on the subsidence of secretion, but Pavlov found that the low acidity, corresponding to a similar rate of outflow at the beginning of the experiment, was absent at this stage, and he has shown that not infrequently all connexion between rate of secretion and degree of acidity can be removed if the stomach has been well washed by ample secretion. He has also shown that by continued fictitious feeding the chlorides in the body may be so diminished that the feeding ceases to produce an secretion of a dilute gastric juice of a constant acidity of 0·18 per cent. After the first hour the acidity percentage fell to 0·146, but even after seven hours it remained at 0·109. The acidity therefore fell somewhat as secretion proceeded.

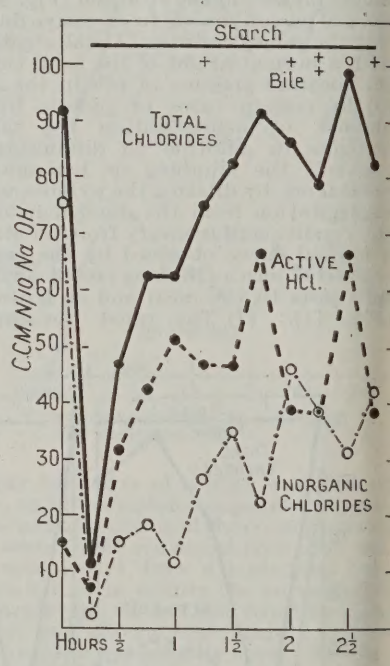
In 1921, at the commencement of our work with the fractional test-meal at University College Hospital, E. K. Martin and myself did some fistula work on cats. The idea was to collect the juice in fractions from the fistula whilst a fractional test-meal was in progress. We found that this was impracticable, because with the fluid meal we administered, although secretion might begin in fair amount, at the end of about an hour or a little more it sank to driblets of fluid and mucus. We therefore collected the juice from the beginning to the end of each experiment. I quote five experiments (Table I.). The figures show the average percentage composition of the juice collected over each period of time. They all show a gastric juice varying

FIG. 12.



Functional disorder.

FIG. 13.



Pyloric ulcer.

effect; and yet the fluctuations of acidity in the samples of juice last secreted lie within normal limits. Although neutralisation is an important cause of fluctuations in the acidity of the gastric juice, at the same time Pavlov recognised the possibility of some other relation existing between the rate of secretion and the degree of acidity. With this idea in mind Rosemann,[24] in 1907, advanced the hypothesis that the amount of HCl, which the gastric cell forms from the total chloride supplied to it, depends upon its secretory energy, so that when this energy diminishes towards the end of secretion the HCl content of the gastric juice falls and the neutral chloride rises, so that the total chloride remains more or less constant. He did a large number of experiments with gastric fistulæ using the whole stomach and employing the method of sham feeding, the juice being collected every half hour. In no case did the acidity fall below 0·319 per cent., and it was usually not less than 0·45 per cent. after four or five hours. The greatest rise in neutral chloride was 0·22 per cent. These variations are very small, and may be described as being almost within normal limits as Pavlov described. In 1915,[3] whilst studying the action of free HCl upon the connective tissue base of experimental gastric ulcer, I had occasion to use pilocarpine and did six acute experiments. I found that it produced a little from the normal acidity and containing small amounts of neutral chloride of about the same percentage as that usually given for normal gastric juice, whatever was the stage of digestion reached in each case, as judged by the amount of residual gastric contents. Any variations in acidity apart from neutralisation must, therefore, have been small. The amounts of secretion were quite considerable in view of the size of the pouches.

TABLE I.

Cat.	Meal.		Pavlov fistula.				Stomach contents.		
	Subst.	Amount (c.cm.).	Time (hr.).	Amount (c.cm.).	HCl.	Neutral Cl.	Amount (c.cm.).	HCl.	Neutral Cl.
B	Bovril	30	¼	1	0·378	0·07	?	0·165	0·255
A	„	65	1	?	0·432	0·086	Stomach empty.		
B	Glaxo	80	1	3	0·345	0·07	26	0·068	0·122
C	„	90	1	3	0·422	0·028	39·8	0·123	0·129
E	Meat	?	1¼	5·05	0·556	0·092	?	0·093	0·115

It seems quite likely that there are two factors influencing the acidity of the gastric juice: (1) neutralisation at the beginning and end of secretion,

and (2) diminished formation of HCl after a time owing to lessened energy of secretion. The alterations in acidity are related to the rate of flow of the gastric juice, so that in all Pavlov experiments the amounts of juice secreted should be recorded. Such alterations vary from animal to animal, and in the majority of cases are not large, and occur at the beginning and toward the end of secretion. Within the last few weeks MacLean [25] has published two papers upon this subject. He has produced Pavlov fistulæ in two dogs and collected the juice from them every half hour during digestion. He shows two curves of acidity. He has obtained a juice containing a constant percentage of total chloride throughout the experiment, so that as the percentage acidity rises to its maximum that of the neutral chloride falls, and as the secretion subsides the fall in acidity is accompanied by a rise in neutral chloride percentage. At the beginning and end of secretion there are only very small quantities of juice, so that an analysis cannot be made, and he assumes that at these periods the secreted juice consists of sodium chloride almost entirely. The important difference between his observations and those of others is that the fall in acidity he obtains as the secretion subsides is greater, so that at the end of three hours the percentage acidity stands in the region of 0·2. His explanation is that during the rise of secretion the sodium chloride changes into HCl, and during its subsidence this process gradually ceases so that the HCl is replaced by neutral chloride. This subsidence he regards as due to the inhibitory effect which HCl in the stomach produces upon the further secretion of HCl. There is no mention of the amounts

FIG. 14.

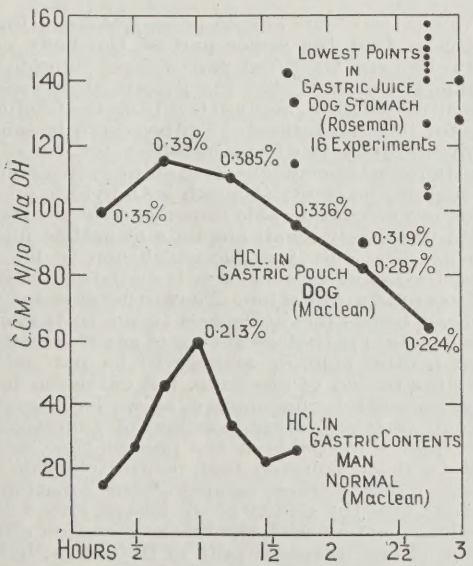
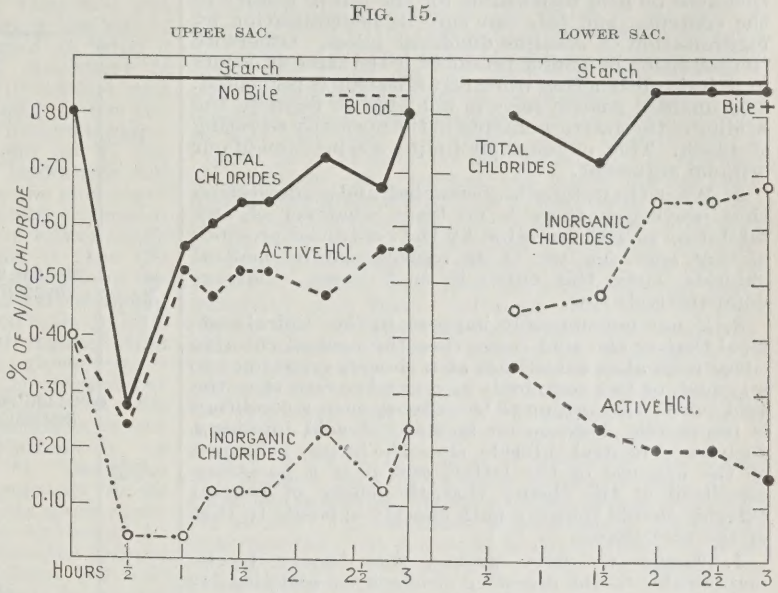


Chart comparing percentage of hydrochloric acid in (1) gastric contents after test-meal in man; (2) gastric juice from a Pavlov pouch in the dog; and (3) gastric juice from the whole stomach of the dog after a sham feed.

secreted nor of neutralisation by mucus at any stage of secretion and however small an amount of juice is secreted. This explanation of the process of gastric secretion cannot, therefore, be accepted as it stands without further investigation.

As regards the entirely *separate question of the acidity of the gastric contents*, MacLean regards the curves of this acidity as being produced by the same process as the secretory curves of gastric juice he gives. He considers that the reduction in acidity obtained by the fractional test-meal in the digesting stomach is due to the gradual replacement of HCl by neutral chloride and that duodenal regurgitation plays no part in it. Such a hypothesis is unlikely, because a replacement of acid by neutral chloride would only affect the acidity of the juice in process of secretion, and not that of the already existing gastric contents, the acidity of which can only be lowered by dilution or neutralisation.

FIG. 15.



Simultaneous curves obtained from the two portions of an hour-glass stomach.

1. The acid curve of the pouch is of the same shape as that obtained by the clinical test-meal, but it does not follow that they bear the same interpretation; on the contrary, it is clear that they must represent different processes since the conditions in each are different. The acid curve of gastric juice draining out of the empty stomach cannot mean the same as the acid curve of the contents of the digesting stomach. At the height of the acid curve in the digesting stomach when the fall is about to commence there is present a variable amount of gastric contents of an acidity of, say, 0·2, which will gradually leave the stomach in the next one or two hours or less. *If duodenal regurgitation be excluded* the only fluid mixing with the contents during this time is the gastric juice which is being secreted. The composition of this juice during the various half hours of digestion according to MacLean is as shown in Table II.

TABLE II.

Time after meal.	HCl.	NaCl.	Time after meal.	HCl.	NaCl.
½ hour	0·35	0·18	2 hours	0·34	0·19
1 ,, ...	0·39	0·13	2½ ,, ...	0·28	0·25
1½ ,, ...	0·38	0·14	3 ,, ...	0·22	0·28

At this stage of digestion very small amounts of gastric juice secreted.

Fig. 14 shows the acidity of the same gastric juice plotted out as a curve, below which is the curve of acidity of the gastric contents of a normal person; the dots represent the lowest points of gastric juice acidity in 16 experiments by Rosemann. It is clear that admixture of this juice with the gastric contents cannot result in any fall of acidity in the contents,

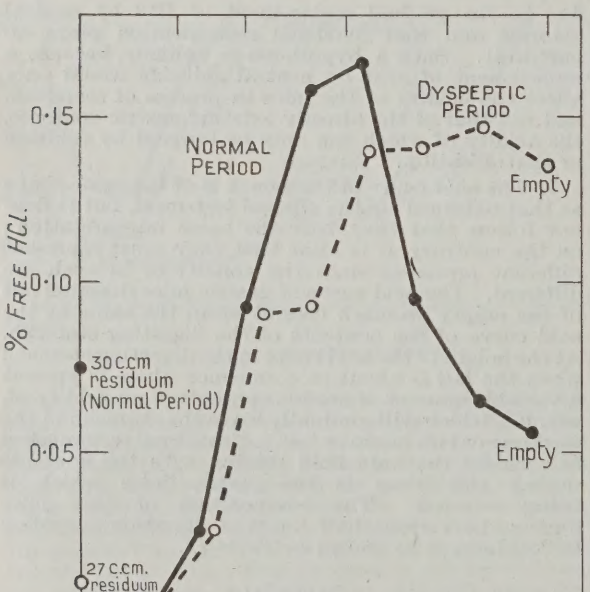
since the juice acidity is higher than the contents acidity all the time. Gastric juice, therefore, although it may contain an excess of neutral chloride, is unable to reduce the acidity of the gastric contents into which it is secreted, because its acidity is at all times greater than the contents acidity. Some other factor must therefore be held responsible for the fall in acidity of the contents, and this can only be neutralisation by regurgitation of alkaline duodenal juices. Otherwise the condition of acidity produced is the same as occurs in pyloric obstruction when regurgitation is prevented. The unaided gastric juice is not able to regulate the acidity of the gastric contents in the normally secreting stomach. This, of course, is simply a repetition of our original argument.

2. When the pylorus is obstructed, and regurgitation thus prevented, there is no trace whatever of any inhibition of HCl secretion by the continued presence of that acid, nor yet of its replacement by neutral chloride, since this curve in such cases is always comparatively low.

3. It not uncommonly happens in the clinical test-meal that as the acid curve rises the neutral chloride curve rises also, sometimes at a slower, sometimes at an equal, or less commonly at a quicker rate than the acid curve. According to this theory such a condition is impossible, because an increase of acid implies a decrease of neutral chloride, since the former is formed at the expense of the latter, and it is a necessary condition of the theory that the curve of neutral chloride should follow a path exactly opposite to that of the acid curve.

4. Finally we have proved this theory to be inapplicable to the digesting stomach by selecting for

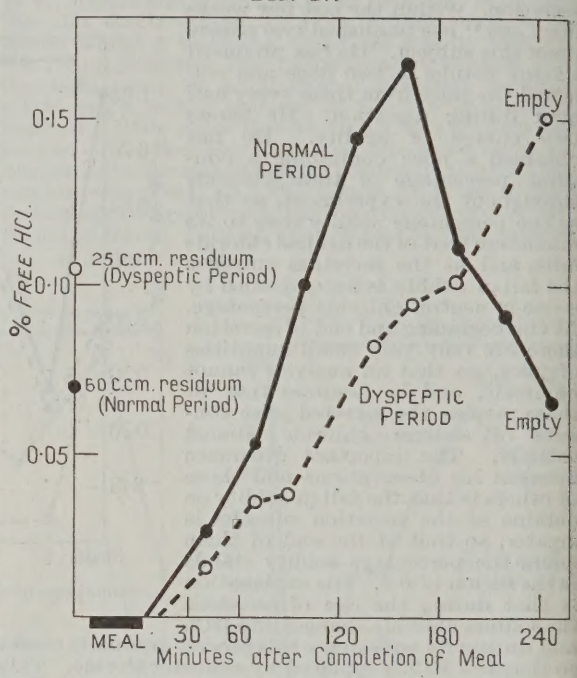
FIG. 16.



Hydrogen-ion concentration of gastric contents during digestion of test-meal (2 oz. oatmeal boiled in 1 pint of water) determined by quinhydrone electrode on samples of 1 c.cm.

observation an hour-glass stomach in which the constriction was situated about the middle of the body, so that there was ample secretion of normal acid gastric juice into both sacs. Two tubes were passed into the stomach under the X rays, one into the upper and one into the lower sac. From the upper sac we have obtained a curve of continuously high acidity with the very slight increase of 0·07 per cent. in the neutral chloride towards the end, and from the lower sac a curve of normal neutralisation. The tube in the lower sac did not work well at the beginning and an insufficient amount was extracted for reliable analysis, but the reaction of the fluid obtained was strongly acid. The fasting juice in the upper sac shows that some

FIG. 17.



Hydrogen-ion concentration of gastric contents during digestion of ordinary meal (chop 10 oz., including bone, potatoes 3 oz., tomato one, butter ½ oz., bread 3 oz., and water ½ pint) determined by quinhydrone electrode on samples of 1 c.cm. Note that the scale of the abscissa (time) is half that of Fig. 16.

neutralisation occurs in it in process of time (Fig. 15). It is clear that the upper part of the body cannot secrete HCl and the lower part neutral chloride; and it cannot be argued that the pyloric glands secreted the neutral chloride, because it is from the fundus that a Pavlov pouch is formed. Neither can it be said that the pyloric juice was the neutraliser, for it is of little importance in the neutralisation of the gastric contents, although in the empty stomach both pyloric juice and mucus are of considerable importance as neutralising agents when only small amounts of gastric juice are present. The only possible conclusion to be drawn is that the fall in the acid curve is due to neutralisation by duodenal regurgitation. The further evidence which MacLean brings forward seems to me to throw light upon a certain pathological type of gastric secretion in which neutral chloride appears to be put out from beginning to end of digestion, but curves such as he describes must be uncommon, as we have seen very few out of a very large number of investigations. The evidence available at the present time seems to point to the conclusion that neutral chloride under certain circumstances escapes transformation into HCl, and that the acidity of the gastric juice varies to a moderate extent with the rate of secretion after the fashion of the inorganic salts of the saliva, but such occurrences can in general only play a minor rôle in the regulation of the acidity of the gastric contents when the gastric secretion is normal.

The relaxation of the pylorus occurs at a definite time during digestion, varying in individual cases, and must be regarded as a definite link in the chain of events, which constitutes the normal digestive process. It is quite true, as Ryle[26] has pointed out, that in addition to pyloric relaxation there must also be a simultaneous adjustment of intragastric and intra-duodenal pressures, so that the pressure in the pars

pylorica must fall below the pressure in the duodenum. In order to obtain more definite information of this process, therefore, Salmond and myself [27] have recently studied the movements of the duodenum as carefully as possible by the X rays in a series of normal persons, and also in patients suffering from functional disturbance only or in addition organic disease. We found that in 93 per cent. of the cases examined the duodenum exhibited to different degrees the movement of antiperistalsis, which we regard as being a normal condition. Sometimes this movement is definite and clear, sometimes it is ill-marked and indistinct, sometimes it is imperceptible. It has the effect of swinging back the food which frequently may be seen to distend the cap, being held up by the pylorus. Each food mass may swing backwards and forwards several times or once only; or the movement may be only occasionally seen. It occurs independently of duodenal or gastric peristalsis or relaxation of the pylorus, but the important point is that the duodenal cap is filled under pressure not only by the stomach, but also by the duodenum, and the only barrier to regurgitation into the stomach is the pyloric sphincter. Now it is quite clear that regurgitation cannot occur into the stomach when the pylorus relaxes before a gastric peristaltic wave, as the intragastric pressure rises to 30 cm. water or higher at this time, and the mean pressure in the duodenum is not higher than 10–15 cm. water (Marbaix [28]) or 14–20 cm. water (Payne and Poulton [29]). The mean intragastric pressure, however, is commonly below 10 cm. water, so that regurgitation could quite easily occur between peristaltic waves. We are bound to assume that in the early stage of digestion the pylorus relaxes only before gastric peristaltic waves, but that as digestion proceeds and the acidity attains its normal height, the pylorus begins to relax independently of peristalsis and if the cap is full at this time regurgitation back into the stomach occurs. That this is the case is evident from the fact that we observed regurgitation in six cases between gastric peristaltic waves, the food being seen to pass right back into the stomach through the cap owing to the impetus imparted to it by the second part of the duodenum. It is probable that this type of mass regurgitation only occurs when the pylorus happens to be open during a vigorous antiperistaltic wave.

In a later series of observations Salmond has noticed regurgitation of another kind, which is perhaps that most commonly occurring. This occurs during both a passive and an active phase of the cap. In the former whilst the cap remains distended and between peristaltic waves a thin stream of barium may be seen to run back into the stomach, in the latter a contraction of the cap beginning at the peripheral end produces the back-flow. At the present moment all that can be definitely stated is that the fact of regurgitation has been established by the X rays, but nothing more definite can be said about it. Antiperistalsis of the duodenum delays the food and holds it up in that structure, thereby establishing conditions favourable to regurgitation back into the stomach when the pylorus relaxes at a favourable moment. Apperly [21] has recently brought forward evidence to show that the control of the pylorus in thus permitting regurgitation ultimately depends upon the salt values of the duodenal fluids.

In the empty stomach the tone of the pyloric sphincter is low, and it may remain open for many minutes at a time, relaxing quite independently of peristalsis. The small amounts of gastric juice which are secreted are expelled periodically into the duodenum, and regurgitation back into the stomach of gastric, pancreatic, and other juices likewise occurs, and these form the mixed secretions found in the fasting stomach to the amounts of 30 c.cm. or 50 c.cm. This is the condition of the pylorus in the fasting stomach, and at the height of the acid curve during digestion it begins to return to this state as the stomach empties. In the condition of irritability the pylorus refuses to commence this independent relaxation at the usual time, and the acid curve continues to mount as the concentration of HCl in the gastric contents increases. In a certain number of patients the stomach empties very rapidly and the food is shot through the duodenum without being held up. Regurgitation cannot take place in such cases, and a climbing curve results.

Although we cannot usually show in any one individual all the phases in the action of the pylorus from the onset to the cure of his complaint, sometimes however, we are fortunate enough to meet with such cases, and there can be no doubt whatever that pyloric hypertension occurs to different degrees, for different times, and irregularly in the same patient, so that one must not expect every case to give a typical curve of defective neutralisation. In the case of a patient, who worked out many curves upon himself and who suffered from pyloric pain, the normal curve was that which he most constantly showed when in an interval of freedom, and a curve of deficient neutralisation when in a period of illness. He used an electrical method and therefore only extracted small quantities each time. Although there was no pain during the examinations one would have expected, with a rising acid curve, some slight prolongation of the emptying time as seen in Figs. 10 and 11. This is probably due to the difficulty of accurately determining the emptying time when a full mixed meal is used, unless the stomach is washed out (Figs. 16 and 17).

In a series of 138 cases of fractional test-meals 101 showed pain in isolated positions and 37 in combined positions. There are three groups of curves: (1) normal; (2) deficient neutralisation (=pyloric hypertension; (3) excessive neutralisation (=pyloric hypotension). The analysis of the 101 cases is as given in Table III.

TABLE III.

Position of pain.	Curves.			Total.
	Normal.	Defective Neutralisation.	Excessive Neutralisation.	
Upper sternum ..	—	1	—	1
Lower sternum ..	3	—	—	3
Upper st.-umbilical	27	19	5	51
Middle "	5	9	—	14
Lower "	2	20	—	22
Right 9 c.c. ..	3	2	—	5
Left 9 c.c.	1	1	—	2
Right and left 9 c.c.	—	3	—	3
	41	55	5	101

Combining the areas together we obtain the following:—

Part affected.	Pylorus.			Total.
	Normal.	Hypertension.	Hypotension.	
Cardiac region ..	27	19	5	51
Pyloric region ..	11	35	—	46
Œsophagus ..	3	1	—	4
	41	55	5	101

In this series pyloric hypertension occurred in 37·2 per cent. of cases with cardiac pain, in 76·1 per cent. of cases with pyloric pain, and in 25 per cent. of cases with œsophageal pain. This series of cases, therefore, strongly supports the view that the hypothesis formed above of the probable course of pathological events giving rise to the pyloric syndrome is correct; and also that both cardiac and œsophageal pain are often secondary to the pyloric hypertension occurring in this condition, because the percentage 37·2 is higher than should occur in a normal series. The number of œsophageal cases are too few to be reliable, but curves are not as a rule done in such cases. The cases of hypotonic pylorus belong to the cardiac group of cases.

Turning our attention now to the amount of gastric juice secreted. Of 54 cases of diminished secretion 32 affected single areas and 22 combined areas. An analysis of the 32 cases is as shown in Table IV.

TABLE IV.

Position of pain.	Time of onset.				Cases.
	At once or quite soon.	½–1 hr.	1 hr. up.	Irreg.	
Upper sternum ..	—	—	—	1	= 1
Lower sternum ..	—	1	3	—	= 4
Upper st.-umbilical	3	8	3	2	=16
Middle „	2	2	1	4	= 9
Lower „	1	—	1	—	= 2
Total	6	11	8	7	=32

It appears that in diminished secretion of gastric juice the body of the stomach is more likely to be affected than the pyloric end. With regard to the time of onset of symptoms, in only a quarter of the cases did the pain begin later than one hour after eating. If all cases are combined together in respect of this point the following result is obtained :—

—	Time of onset.				Cases.
	At once.	½–1 hr.	1 hr. up.	Irreg.	
All areas and combinations ..	13	16	14	11	=54

So that not only is the body of the stomach more often affected when the secretion is diminished, but the symptoms tend to occur irregularly and in the early period of the digestive process. There is no primary form of functional disturbance of the stomach due to a diminution of gastric juice ; so long as the stomach empties normally there are no ill-effects or secondary symptoms, but if delay occurs bacterial fermentation of carbohydrates may occur if the free HCl falls below 0·07 per cent. Any marked degree of dilatation of the stomach or bacterial fermentation is, so far as I am aware, unknown in functional disturbance of the stomach.

It is doubtful if hypersecretion of the gastric juice is ever a primary cause of functional disturbance of the stomach. A digestive hypersecretion in which amounts above the average normal are secreted during digestion and which may outlast this act for varying times is common enough, especially in duodenal and pyloric ulcers, and is recognised by a rapid rise in the total chloride curve when the stomach is full and emptying normally, or sometimes by the continuance of the secretion when the stomach is empty ; it is, however, uncommon to find large amounts of juices in the fasting stomach, most amounts being well within the average limit of 30 c.cm. Clinically such cases differ in one respect only from those in which no such increase occurs, and that is in the eructation of fluid in larger quantities than usual. The question arises whether the so-called periodic hypersecretion—that is to say, paroxysmal attacks of hypersecretion of gastric juice—ever gives rise to symptoms which entitle it to be styled an independent affection. It is quite true that there are cases in which attacks of pain and the vomiting of large quantities of watery fluid of varying degrees of acidity occur, and that in such cases no signs of any nervous disease are present or of any cause which might produce a reflex effect upon the stomach. It is, however, impossible to speak of such cases as gastric neuroses unless they have been shown free from organic disease by operation, a state of affairs I have not yet personally seen. My view would be that it is not yet proved that any alteration in the secretion of gastric juice could be described as constituting a primary functional disturbance of the stomach, although, when present, both a diminution and an increase in the gastric juice undoubtedly modify the gastric symptoms present in the different forms of dyspepsia in which they occur.

B. CARDIAC SYNDROME.

The body of the stomach shows the important difference from the pyloric end that the symptoms due to its disorder are manifested during both phases of activity of the stomach. They are due to incapacity on the part of the body to accommodate itself to the volume of its contents whilst it is being filled or emptied. In the former case the lengthening reaction and in the latter case the shortening reaction of its muscular fibres is interfered with, and their contraction tension is raised.

Causes.

1. In order that the stomach may accommodate itself in the normal fashion *whilst it is being filled* with food, two conditions must be fulfilled. The food must not be eaten too quickly and the muscular coat must be able to respond in the normal manner.

(*a*) The first cause of the cardiac syndrome, therefore, is bolting of the food. Now a great many people bolt their food with impunity, or occasional feelings of fullness only, but sooner or later, depending upon the make up of the nervous system of the individual, the muscle becomes irritable, reacts too strongly, and an attack of dyspepsia supervenes.

(*b*) The second cause is either irritability of the neuro-muscular mechanism or the so-called atony.

Irritability is brought about in one of the three ways I have already mentioned in the case of the pyloric region. (1) A local focus of irritation to the myenteric plexus as an ulcer of the body of the stomach, or a general irritability produced by acute gastritis. (2) Reflex irritation from some other portion of the digestive tract, and about this we know less than in the case of the pylorus, except that it no doubt occurs. (3) Instability of the central nervous system, on the other hand, is of the greatest importance as a cause of irritability of the body of the stomach. This effect is no doubt exercised through the vagus. There is in all cases some slight cause, probably sometimes no more than a mere exaggeration of the normal movements or sensation. The condition becomes exaggerated and persists as a chronic irritability.

Atony of the stomach in the old sense as a primary condition probably does not exist, but there can be little doubt that in conditions of debility the stomach may be hypotonic as a part of this condition. It is difficult to prove this statement because it is never of any marked degree. As a secondary effect it does not lead to much dilatation of the stomach. The X rays have shown that all cases of marked dilatation are obstructive. Inhibition of the stomach, as Cannon has shown experimentally, may be produced both reflexly and by emotional disturbance. Such conditions in clinical medicine are undoubted and perhaps more as temporary than chronic effects.

2. *As the stomach empties* this condition of neuro-muscular irritability again interferes with the function of accommodation sooner or later during digestion, the exciting cause being the condition of the gastric contents.

In addition to these primary causes the body of the stomach becomes irritable as I have described, or atony may supervene secondary to pyloric irritability.

EFFECTS PRODUCED.

1. *Filling of the Stomach.*

When the normal stomach is *filled too rapidly* with food the muscular fibres are unable to undergo the normal lengthening reaction, and react too strongly, with the result that the intragastric pressure rises, the contraction tension is raised, and a sense of fullness results. After a time as the stomach empties accommodation occurs and the symptom disappears.

When the condition of *irritability* has supervened in any of the ways already indicated and the irritability is excessive the accommodative power of the

stomach is also interfered with. Although the stomach is filled normally the reflex tonic reaction is at once excited and a feeling of fullness or pain is experienced within a few minutes of eating the meal. During the actual consumption of the food there is, as a rule, no pain, and if pain is present it is often temporarily relieved. The explanation is that as the food enters the stomach the relaxation of the cardiac sphincter is accompanied by a receptive relaxation of the body of the stomach through the vagus.[30] It is only temporary and when the meal is finished excessive contraction of the stomach occurs. Such patients may feel quite full after eating small amounts and so they reduce the quantity of their food accordingly. This does not produce the desired result, because owing to the absence of the normal stimulus to the lengthening reaction, the stomach contracts all the more and similar to what occurs on experimental section of the sympathetic. The result is wasting due to insufficient food. Even though the stomach empties rapidly pain may be constantly present and occur in the empty stomach; this must be regarded as due to excessive hunger contractions, the central nervous system being hyperæsthetic. It is more particularly in these nervous conditions that emotion is likely to bring on irregular attacks of pain.

By *atony* is probably meant some degree of loss of tone in the muscle-fibre associated with irritability—in other words, a condition of irritable weakness. Accommodation is defective because the muscular fibre is already relaxed, and when food is put into the stomach a certain amount of tonic reaction occurs at once as the threshold for this reaction is lowered, and the feeling of fullness results. Pain is never present, because the muscle is unable to recover its tone sufficiently to increase materially the contraction tension.

2. *Emptying of the Stomach.*

The function of the body whilst the stomach is emptying is to maintain a constant pressure upon the food, which keeps the pyloric vestibule full. So that it not only acts as a reservoir, but is also the filler-up of the pyloric region. The pressure in the body of the stomach is maintained at a constant level, by the capacity the muscle-fibres have of undergoing a shortening reaction without any increase of their contraction tension. The empty stomach is contracted up and contains a certain amount of air and mixed secretions. Boldyreff [31] first showed that rhythmical contractions occur periodically in the empty stomach, which Cannon and Washburn [32] demonstrated as being the cause of hunger sensations. Carlson [8] has further analysed these movements in detail and shown that two distinct types of movement occur. The first is a tonus rhythm affecting all parts of the body in which the tone increases and diminishes, this alternation continuing constantly without cessation. The second is peristalsis which begins near the cardia and traverses the whole body and pyloric region. When the stomach is filled these two movements cease and the body of the stomach is apparently quiescent, its only action being the steady pressure maintained by its tone. After a short time shallow peristaltic waves appear at the fundus and in about half an hour a tonus rhythm may be demonstrated at the cardiac end. The tonus rhythm and peristaltic waves increase in intensity as digestion proceeds, and continue as those of the empty stomach described above. So that in addition to maintaining its steady grip upon the diminishing contents the body shows rhythmic increase of tone and peristalsis after a period of quiescence.

When the neuro-muscular mechanism is irritable these movements are exaggerated—that is to say, there is a general increase of the tonic contraction, with increase of the tonic variations which no doubt amount to gastrospasm in some cases. The symptoms due to these exaggerated contractions will be likely to commence when the body really gets to work, i.e. about half an hour after eating, but they may appear at any time up to about two hours later since the acidity is rising and the gastric contents becoming increasingly irritating. They will not be likely to begin later since the gastric contents will have materially diminished in volume and the wave of neutralisation commenced, for the pylorus will be acting normally. Variations naturally occur, for in some cases the food leaves the stomach rapidly and now the symptoms will be shorter and less severe. If pain occurs later than about two hours after food it may be concluded that the pylorus is beginning to hold up the contents. The earlier the pain comes on the more likely is it to depend upon irritability due to the central nervous system, and the later it appears the more it depends upon the irritating and acid gastric contents. Alkalis will remove the symptoms in these cases.

Owing to the increased pressure in the body œsophageal regurgitation is liable to occur as in the pyloric syndrome. The fluid may be acid if neutralisation has not yet occurred, but it is more often bitter or neutral since the acidity of the contents is lower than in pyloric cases. The patient is more neurotic and more likely to eructate gas voluntarily. This type of case produces no effect whatever upon the acidity of the gastric contents nor upon the digestive process. When food is eaten the movements are inhibited, a lengthening reaction takes place in the muscular fibres, and the pain ceases. This is not always the case nor does it occur so regularly as in pyloric cases, for relaxation occurs less easily when the muscle is very irritable, but even when pain comes on in half an hour after food it is not uncommonly relieved. When the stomach is hypotonic there is no pain but sometimes fullness, for the muscle is unable to recover its tone sufficiently to increase materially its contraction tension. As the stomach empties owing to the loss of tone the pyloric end is not kept normally filled so that the emptying time is delayed. The symptoms disappear as the contents become less. The tone of the cardia is lessened and eructation and air-swallowing facilitated, which symptom depends upon the state of the nervous system of the patient.

C. Œsophageal Syndrome.

Œsophageal symptoms are due to the presence of liquid or solid material or gas, which give rise to reflex tonus rings and peristalsis. Their presence is accounted for by regurgitation from the stomach or by abnormal deglutition—that is to say, bolting the food and gulping down liquids. We know very little indeed about reflex nervous effects upon the œsophagus, but there can be no doubt that the influence exerted by the central nervous system is very marked.

Regurgitation into the œsophagus tends to occur whenever the intragastric pressure rises as the result of increase in muscular contraction or external pressure as in voluntary eructation, and is only prevented by the tone of the cardiac sphincter, which follows that of the body of the stomach. This tone is normally low, for an intragastric pressure of 25–30 c.cm. of water is enough to overcome it. However the regurgitation is produced the effects upon the œsophagus are the same. Speaking broadly, the effects are modified by the degree of acidity of the gastric contents and the condition of the œsophagus as regards irritability. Cannon [33] has demonstrated experimentally the course of events when a fairly full liquid meal is administered to the cat. So long as the contents are neutral the liquid regurgitates at each relaxation of the cardia three or four times a minute, but when the gastric contents become acid the regurgitation ceases owing to increased tone of the sphincter. Each time regurgitation occurs the fluid is held up by the cardiac sphincter and passed back into the stomach by reflex peristaltic waves originating in a tonus ring produced at the upper end of the fluid. It is common enough to witness the same series of events by the X rays in patients after a full meal and when lying on the back, without their experiencing any sensation whatever. This is the usual result when the nervous system is normal and the œsophagus not irritable, unless the gastric contents are acid in reaction, as, for example, during the later stages of

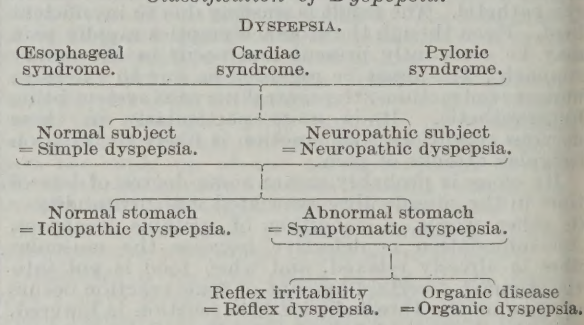
digestion in the condition of pyloric irritability. In such a case repetition of the regurgitation after a time leads to irritability of the muscular coat and mucous membrane of the œsophagus, and the fluid is held up for longer periods by persistent hypertension of the cardiac sphincter. Increased tension is maintained in the œsophagus by persistent ring spasms at various points. Tightness or aching is thus produced in the lower chest, and a burning sensation may be imparted to it by the hypersensitive mucous membrane and twinges of referred pain may occur in the jaw. Severe pain at the ensiform is now and then experienced from spasm of the cardia and lower œsophagus. Swallowing water will relieve the feelings by clearing the œsophagus.

When the patient is neurotic other symptoms are liable to occur whatever is the reaction of the gastric contents. These are due to the hypersensitive condition of the mucous membrane, to the ready and persistent response of the œsophagus to stretching, to the efforts at voluntary eructation, and excessive voluntary swallowing movements. The effects of the latter, although they may on occasion temporarily remove the œsophageal contents are, on the whole, to maintain the condition. In the normal individual the cardiac sphincter does not relax before each peristaltic wave, particularly if saliva and air alone are swallowed, so that in these patients the contents, chiefly air and some liquid, tend to be held up, unless the sphincter relaxes before the swallowing of food or is forced by the voluntary efforts of the patient, a feat he is by no means always able to perform. The air is retained in the œsophagus by a ring spasm at the upper part and a constant lump or tightness is felt in the upper sternum, which the patient often tries to swallow. The air moves up and down the œsophagus in response to ineffective reflex peristalsis, and such patients may feel the sensations shift up and down. Sometimes exaggerated peristalsis occurs with every meal and the patient feels his food pass all the way down like a series of lumps; or the hyperæsthetic mucous membrane causes a burning or soreness throughout the whole length of the œsophagus.

Abnormal deglutition as a primary cause of œsophageal symptoms is due to imperfect mastication and lubrication of the food and rapid swallowing. The food passes down the œsophagus slower than normal, as first shown by Hurst [34] with the X rays, and according to him it may take 15 minutes to descend in place of the normal 8 to 18 seconds. Several pieces may be seen in the œsophagus at the same time; occasionally it may stick for a long time at the level of the bifurcation of the trachea and even be regurgitated. The cardia may hold up the food, and in one of my patients a piece of meat was fished up from the lower end of the œsophagus. I am quoting cases who after some years are now in perfect health.

Œsophageal peristalsis is a reflex act which is initiated by a single afferent impulse started by the contact of the food with the back wall of the pharynx and adjacent areas. This single impulse is sufficient to ensure the completion of the act of swallowing. It spreads in the deglutition centre evoking a series of motor discharges which pass through the vagi to the œsophagus. What is particularly important from our point of view, however, is that œsophageal peristalsis may be initiated at any point in its course by local stimulation. A foreign body in the œsophagus as shown by Carlson,[8] if it causes a certain degree of distension, will produce a local contraction lasting up to a few minutes at the point where it is lodged; from this local ring spasm peristaltic waves are sent down the œsophagus periodically till the body is removed. A voluntary deglutition will start off these movements again when they have quieted down. This form of tonic contraction is due to a reflex through the vagus. Cannon [35] has shown experimentally that the lower portion of the œsophagus, the muscular coat of which entirely consists of unstriped muscle, is able to take on an automatic action, when the vagi are cut. When the wall is stretched by food a ring constriction appears and from this peristaltic waves pass down and clear the œsophagus; these movements occur as the result of local reflexes through Auerbach's plexus. This temporary retention of food and gas in the œsophagus through the ring spasms produced causes tightness and pain in the chest soon after meals. The normal peristalsis of the œsophagus when a meal is eaten properly clears away the material and relieves the symptoms. In the patient of stable nervous system such symptoms are of little moment and only occur when the individual in question is indiscreet. If the bolting of food becomes a customary proceeding or the patient is neurotic, the œsophagus becomes irritable and hypersensitive and more easily responds to stimulation. Voluntary eructations and swallowing movements add to the air in the œsophagus, and all the other phenomena develop which I have already described.

Classification of Dyspepsia.



The symptoms included under the term dyspepsia are due to altered nerve reflexes and vary in accordance with the excitability of these reflexes, which in turn depends upon the stability of the central nervous system. Individuals vary very considerably in this respect and many grades exist between the average normal person and the neuropath, so that the symptoms constituting dyspepsia must be classified according to the stability of the nervous system of the subject of them.

1. NORMAL SUBJECT.

The nervous system of this type of individual is normal, and the normal stimulus of food gives rise to a normal motor response, with little or no sensory accompaniment.

The functional disturbance of the stomach from which such a person suffers is of the *physiological order*—that is to say, an abnormal stimulus gives rise to an increased motor response with sensory accompaniment. Such a condition may be called *simple dyspepsia*, and this includes three fundamental groups of symptoms:—

1. *Pyloric syndrome* in which the symptoms are due to irritation of the pylorus, with secondary effects upon the body of the stomach and the œsophagus.

2. *Cardiac syndrome* in which the symptoms are due to irritation of the body of the stomach with secondary œsophageal effects.

3. *Œsophageal syndrome* in which the symptoms are due to primary or secondary irritation of the œsophagus.

The symptoms are characterised by order and regularity in their appearance and disappearance and are clearly indicative of the region affected. They occur at stated times during digestion when the irritable part is brought into action, and cease when its task is ended. They are easily relieved by removing the abnormal stimulus—that is to say, by dieting the patient. The pyloric syndrome is particularly characteristic of this type.

2. NEUROPATHIC SUBJECT.

The functional disturbance of this type of person is of the *pathological order*—that is to say, a *neurosis*. There are two groups of cases.

1. The increased motor and sensory response may persist after cessation of the abnormal stimulus. This condition is

n advanced stage of that described as simple dyspepsia. ll patients do not proceed to it, but only those who are of neuropathic tendency or have acquired it by exhaustion, verstrain, overwork, and worry, and especially those uffering from the cardiac and œsophageal syndromes. The ain appears sooner than it did before or irregularly, and is nfluenced by emotion, nerve strain, and other occurrences f everyday life, but is not so easily relieved by food. ttacks are easily precipitated and are not so easily relieved y treatment as formerly. Voluntary interference on the art of the patient also tends to obscure the syndrome.

2. In the second group the patient is definitely neuro-athic, but there is always some initial disorder, however ivial, which may soon be overshadowed, since there is wering of the threshold of excitability leading to constantly creased motor and sensory disturbance, the stimuli being ormal. The cardiac and œsophageal syndromes are those ost constantly present, but all the parts may be affected equal degree simultaneously or irregularly. Disorder and regularity are characteristic of this type, and symptoms ay be present in the empty stomach. In some cases the atient begins to interpret his symptoms variously and equire exaggerated motor and sensory symptoms depending n his ideas of what they should be. The symptoms thus lose eir localising value. Isolated symptoms are developed such eructatio nervosa, anorexia nervosa, or perversions of petite, nervous vomiting, nervous nausea, painful empti-ss, transient obstruction of the œsophagus; in fact, any mptom may become an obsession or a phobia.

These syndromes occur in three different types of omach.

(*a*) The stomach may be *normal*, and in this case e causes of these disturbances are twofold:—

1. The quality or quantity of the food or drink; its mode preparation; or the presence of irritants in it.

2. The mode of filling the stomach, in which both mastica-n and deglutition are concerned.

The disorders are more easily excited in the omach in individuals who are the subjects of some ronic illness, such as anæmia or an infective process intoxication.

(*b*) The stomach may be the seat of *organic disease*.

1. The disease—for example, ulcer—acts as a focus of itation to the part of the stomach in which it is situated d the same syndromes as in simple dyspepsia are produced the food. The patient commonly has no symptoms when ing a regular life and on a plain diet, but if either of ese conditions is unfulfilled the position of the disease termines the resulting syndrome. The syndromes are aracterised by great regularity in the pain and its recur-nces, and by its severity and long continuance. If the tient is neurotic the regular symptoms are overshadowed d the condition becomes unrecognisable.

2. If the stomach is structurally altered, so that the motor nctions are interfered with as in pyloric obstruction or ncer, the disordered functions are so pronounced as to nstitute special indications of the disease in question. e X rays and other tests afford valuable aids or conclusive oof of the existence of organic disease.

(*c*) The stomach may be the subject of *reflex itability* from some other part of the body, more rticularly of the alimentary canal, the chief causes ing the gall-bladder, the intestines, and the pendix. The symptoms are produced by the food d the resulting syndrome depends upon the part of e stomach irritated and the time when the irritation most marked.

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THE EARLY DIAGNOSIS OF CANCER OF THE COLON AND RECTUM.*

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THE early diagnosis of carcinoma of the colon depends primarily upon the ability of the practitioner to obtain an accurate history of the patient and to recognise what symptoms should lead him to suspect that this disease is present. By the time that the first symptoms appear a growth is likely to have attained such a size that a definite diagnosis can be made by means of the X rays, the sigmoidoscope, and examination of the stools, or, in the case of the rectum, by digital medical examination.

The table gives the duration of symptoms at the time of admission into New Lodge Clinic for diagnostic purposes of 25 consecutive cases of cancer of the colon and rectum.

Table showing Duration of Symptoms in Twenty-five Cases sent for Diagnosis.

Cases.	Duration of symptoms in months.	Cases.	Duration of symptoms in months.
2	2	5	12
3	3	2	16
1	4	3	18
2	5	1	24
4	6	1	36
1	8		

The case in which symptoms had been present for three years was one in which malignant degeneration had occurred in a group of polypi in the descending colon. As an early diagnosis and operation might have prevented the development of carcinoma, there is no reason why it should not appear in the table.

*An abstract of this paper was communicated to the Proctological Section of the Royal Society of Medicine on May 3rd.

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The average duration is 10½ months, or 9½ months if the case of polyposis is excluded. It is clear, therefore, that the prospects of radical cure by operation would have been very different if all the patients had been sent for investigation directly they complained of suspicious symptoms.

The two earliest symptoms are abdominal discomfort or pain and a change in the habitual action of the bowels. Both symptoms were present in almost all our cases. The discomfort or pain is localised in the segment of bowel proximal to the obstruction. It is a small intestine pain and is felt in the neighbourhood of the umbilicus in cancer of the cæcum. In cancer of the ascending colon or hepatic flexure it is felt on the right side of the abdomen, and in cancer of the splenic flexure, descending, and iliac colon, and the proximal part of the pelvic colon, it is felt on the left side. Pain produced in the middle segment of the transverse colon is felt just below the umbilicus, and that caused by growths in the distal part of the pelvic colon or pelvi-rectal flexure are localised in the middle line between the umbilicus and pubes. The pain is often colicky, and its disappearance may coincide with a gurgle which can be heard and felt; this is a most significant symptom, which may enable the patient to localise the site of obstruction with great accuracy.

In 9 out of 25 cases the patient had become more constipated and in 6 he had complained of diarrhœa; in 8 cases there was alternately constipation and diarrhœa, or an initial attack of diarrhœa followed by persistent constipation. It is necessary to add that in cancer of the rectum and pelvic colon the diarrhœa is of a spurious type, examination of the stools showing that solid fragments are mixed with the semi-liquid fæces. In only two cases had no change in the habitual action of the bowels been observed.

In contrast with carcinoma of the stomach general symptoms are rarely observed in the early stages. The patient may feel quite fit, with a good appetite and undiminished energy. No anæmia is present and no weight is lost. In only one of this series of cases and in one other earlier case were general symptoms present without intestinal symptoms. The patients were anæmic and complained of anorexia and loss of energy. As occult blood was found in their stools and complete achlorhydria was present, carcinoma of the stomach was diagnosed, though the X rays had shown no abnormality. A growth of the ascending colon was, however, found in one case and a growth of the splenic flexure in the other.

Radiological Diagnosis.

An opaque enema is of great value in demonstrating the site of any obstruction in the colon, as one of us first showed just 20 years ago. It is a curious fact that the enema may be temporarily or permanently held up by an obstruction, which leads to no obvious delay in the passage of an opaque meal. The actual passage of the fluid should always be watched, as a slight obstruction may lead to only a temporary delay in the passage of the fluid, caused possibly by spasm. The point where any delay is observed should be palpated under the screen, as it is not uncommon for a small tumour to become palpable when one's fingers are directed to its exact localisation. Before accepting the apparent "hold-up" of an enema as evidence of a stricture, the patient should turn on to his face, as the fluid occasionally passes on in a normal manner when this is done.

A good radiogram may show the nature of the obstruction, as the narrowing caused by adhesions, diverticulitis, and a fibrous stricture following ulcerative colitis all give appearances which are to some extent characteristic and differ from the irregular jagged outline of that produced by a growth. A filling defect is sometimes recognisable in the complete absence of any obstruction.

It is very important to remember that early cases of carcinoma of the colon may show no filling defect and cause no obstruction to the passage of an opaque meal or opaque enema. In 1909 and again in 1915, before we fully realised this, one of us rejected the diagnosis in two cases, in which the symptoms had made him suspect a growth of the colon. Within three months a tumour became palpable in both cases; the delay in advising operation may have been the cause of the subsequent recurrence.

As a definite diagnosis had been made by rectal and sigmoidoscope examination in 5 out of the series of 25 cases, an opaque enema was given in only 20. It showed obstruction in 14 of them and a filling defect without obstruction in the others; in four of the former an opaque meal also showed obstruction. In one case the meal showed obstruction four inches above the level of the iliac crest, where the opaque enema had been obstructed; corresponding with this the growth was found to have formed the head of an intussusception four inches long. In one case an opaque meal revealed an obstruction which was not shown by an enema, and in one case neither enema nor meal showed any abnormality.

The Stools.

The presence of mucus with a solid stool is of no clinical significance, but blood or pus, with or without mucus, is always an indication that further investigations are required. If associated with entirely fluid or semi-fluid stools, ulcerative colitis is in all probability present, but if in addition fragments of solid fæces are found, even if the patient complains of "diarrhœa," a growth of the pelvic colon or rectum is a more likely diagnosis, but visible blood and pus are hardly ever observed when the growth is proximal to the pelvic colon.

When no abnormal constituents are recognised with the naked eye the patient should be given a farinaceous and chlorophyll-free diet and some charcoal. As soon as all the charcoal has been passed the stools should be examined chemically and spectroscopically for occult blood. In our experience this is present in all or almost all specimens in every case of cancer of the stomach and of the colon. Obvious blood was present in the stools in four cases involving the rectum and in one out of eight involving the pelvi-rectal flexure, but in only one other—the growth of the iliac colon which had formed a chronic intussusception. Occult blood was found in all the remaining 19 cases. In each case a positive guaiac reaction was obtained; in four this finding was confirmed by an extract giving a spectrum of hæmatoporphyrin alone, in three of acid hæmatin alone, and in two of both hæmatoporphyrin and acid hæmatin. The acid hæmatin spectrum is of special importance, as it is rarely seen in cancer of the stomach or ulcer of the stomach or duodenum except after a large hæmorrhage, and it is then always accompanied by the spectrum of hæmatoporphyrin. Of the 19 stools containing no obvious blood four had some excess of mucus, and in two of these and one additional case the patient had occasionally noticed traces of blood before admission to the clinic.

Occult blood is rarely found in uncomplicated diverticulitis and never in constipation or diarrhœa unaccompanied by organic disease. Curiously enough a local band of adhesions involving the colon may also lead to the constant presence of occult blood in the stools. As this condition sometimes gives rise to symptoms and radiological signs indistinguishable from those caused by a growth, the differential diagnosis may be impossible, though there is generally a longer history or illness, the details of which often point to the probable cause of the adhesions. Fortunately it does not greatly matter if a mistake in diagnosis is made, because this type of adhesion is the one form which can generally be dealt with satisfactorily by operation.

Sigmoidoscopy.

It is unnecessary to say anything before the Proctological Section about the value of the sigmoidoscope in the early diagnosis of carcinoma of the pelvi-rectal flexure and pelvic colon, but we should like to suggest, as we have often done before, that it is time that the

profession as a whole learnt to use this instrument, which should no longer be regarded as one which should only be handled by the proctologist. Nobody thinks of diagnosing pharyngitis without direct inspection of the pharynx; nobody should think of diagnosing hæmorrhoids or colitis without digital examination of the rectum and direct inspection of the colon. If this rule were always followed the lives of many patients, who now reach the surgeon too late for radical operation, would be saved. The President of the Section doubtless remembers performing a colostomy on a patient in whose rectum we had found a large inoperable growth; he had seen no less than five medical men within three months of consulting us, not one of whom had made a rectal examination. We have also seen a number of patients with growths of the rectum or pelvic colon, who had just undergone a course of Plombières douches at a British or Continental spa, in whom a digital or sigmoidoscopic examination would have at once revealed the nature of their disease. For successful sigmoidoscopy neither an anæsthetic nor a previous injection of morphia is ever required, and the patient should, if possible, be examined without any preparation by aperients or enemata.

In the present series of 25 consecutive cases a tumour was palpable on abdominal examination in six, in one of which it was only discovered whilst palpating a visualised filling defect under the screen during an X ray examination. In all four cases of rectal carcinoma the tumour could be felt on ordinary digital examination, and in one case involving the pelvic colon it was felt through the anterior rectal wall. The pelvi-rectal flexure, which is the commonest of all sites of carcinoma of the bowel, is situated 4½ inches from the anus and has only a very small range of movement. A growth in this situation is therefore beyond the reach of a finger inserted *per anum* and is only rarely palpable on abdominal examination, but it can easily be recognised with the sigmoidoscope, as it was in the eight cases in our series. In seven cases the tumour was beyond the reach of the sigmoidoscope and was also so small or, in the case of the splenic flexure, situated so high up under the left costal margin that it could not be felt on abdominal examination.

If all cases of suspected carcinoma of the colon were sent for diagnosis within a month of the onset of symptoms many patients would be advised to undergo an operation when the evidence was still inconclusive. But an occasional unnecessary exploration will be more than compensated for by the infinitely better prospects of permanent cure, which will be present if the average duration of symptoms is one instead of ten months when the patient is sent to the surgeon. The surgeon also should be prepared to act upon the indications given by the physician. In 1922 a man of 52 was sent to us with a short history of constipation and attacks of colicky pain in the region of the splenic flexure. Nothing abnormal was felt on abdominal examination and an opaque enema revealed no filling defect nor obstruction, but an opaque meal was held up at the splenic flexure for 48 hours. The stools constantly contained occult blood. A diagnosis of early carcinoma of the splenic flexure was made and the patient was advised to undergo operation. Being dissatisfied, he consulted a well-known London surgeon, who removed his appendix. As no improvement followed the same surgeon six months later divided adhesions which had formed in connexion with the first operation. In 1925, just over three years after we had diagnosed a growth of the splenic flexure, acute obstructive symptoms developed, and the surgeon, who had ignored our advice, now found an inoperable growth of the colon in the exact position we had originally indicated.

We have said enough to show that the early diagnosis and successful treatment of cancer of the colon depend upon timely coöperation between the general practitioner, the diagnostic team, and the surgeon.

OF HALLUCINATIONS.

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The Note on Night-terrors, by Dr. J. W. Shackle, in The Lancet of Feb. 11th, is of great interest to students of psychological medicine, for this disorder is an example of the interaction of psychological and physiological processes. Physicians know well that a physical illness is always associated with a certain degree of mental change, whether it be only a slightly biased outlook on life, generally during the illness, or a more severe and prolonged alteration. There is also a growing amount of evidence that diseases which seem to originate in the mind, such as anxiety states, compulsion neuroses, and possibly psychoses, if not checked, end in physical changes which may go on to organic disease. When the signs and symptoms of an illness suggest that one or more of the body organs is out of order the line of treatment may be clearly indicated. The same may be said of psychical illnesses, but there is a small group of diseases which it is difficult to class, for their signs and symptoms reveal both psychical and physical disturbances, which may have the same origin. This group contains night-terrors, epilepsy, migraine and perhaps psychoses. Primary psychical illnesses such as the neuroses may have had their beginnings, as Alfred Adler suggests, in inherited organic weaknesses and subsequent psychic over-compensation, resulting in excessive emotional strain, and so giving rise to unduly accentuated anxiety, sorrow, grief, disappointment, or alarm. Unlike the neuroses this group seems to have its origins in neuronic instability, although the manifestations might equally indicate a psychical cause. Indeed, some psychologists apparently believe that even epilepsy, which shows so many physical signs and symptoms, is a psychical disease. They base their suppositions on observations of the attacks or fits, which, they declare, are expressions of extreme fear or anger giving rise to such violent attempts at flight or fight, with mental disorganisation and physical incoördination, that the patient is at once rendered unconscious and totally incapable of acting in a purposive manner. We are at liberty to accept this explanation provisionally, for many epileptics show no physical cause for their attacks. We must then turn our attention to the question of what constitutes mind, for the instinct to escape from or to fight a threatening danger, and the emotions of fear and anger which accompany its working, are mental activities.

The Evolution of Mind.

The "Mind" is that which minds the individual—i.e., takes heed or care of it. Mind is not a mysterious deity or spirit enthroned in the body, but the function of groups of specialised cells whose duty it is to govern and coördinate all the groups of cells comprising the body. A simple unicellular being, such as the amœba, has innate tendencies which cause it to behave, inevitably, in certain ways. It must be nourished, it must divide, and it must exert some resistance against environmental activities. Accepting the theory of the evolutional origin of multicellular beings, we can understand that in their simpler forms every cell possesses these tendencies, but that in more complex forms it is necessary for groups of cells to undertake certain functions in order to fulfil these essential needs. Some groups specialise in nutrition, others in reproduction, and others in defence. That all these groups may work together for the common good, it is necessary for them to be coördinated and directed, and this is the function of the nervous system. A coördinating and directing system must know something of the groups it has to govern, or "mind." Its duty is not to digest, to fight or to reproduce, but to mind these processes, and so we may assume that the functions or enduring processes

of the cells which do this work constitute the foundation of mind. The mind, therefore, is founded on the instincts of nutrition, self-protection and reproduction, which give rise in special situations to qualities of experience called emotions. Each instinct has its own peculiar emotion (which some believe sets it in motion and others believe results from its motion). The instinct of nutrition is associated with the experience of hunger, the instinct of self-protection with that of fear or anger, and the instinct of reproduction with love or lust. Instinct and emotion always work together in this way. Love never gives rise to anger and fight, hunger for food never arouses the reproductive instinct, and anger never activates the nutritional instinct.

In the higher animals the cells which perform these fundamental instinctive functions are believed to be in the basal ganglia of the brain. Therefore, just as there are areas of the brain which possess innate power to transform neuronic changes of special kinds into experiences of sensation—i.e., seeing, hearing, tasting, smelling, and touching, and experiences of physical movement, so there are areas in the basal ganglia which correlate all these changes into the experiences which we call emotions or feelings.

Effect of Neuronic Instability.

It is well understood that any neuronic instability results in disordered function. Neuronic instability anywhere in the visual system will give rise to defective sight or visual hallucinations. Neuronic instability in the auditory system will occasion defective hearing, manifested either in various degrees of deafness or in auditory hallucinations. The same is true of the tactile and other sensory systems, in which defective function or hallucination is by no means uncommon, and of the efferent nervous systems, whether secretory or motor. Instability of the secretory neurones will cause hypo- or hypersecretion, while instability of motor neurones may result in paresis, paralysis or twitchings, or clonic or tonic spasms of the muscles they innervate. It would not, therefore, be surprising to discover that instability of some of the neurones of the basal ganglia gave rise to emotional hallucinations.

Some writers on epilepsy have attributed the attacks to abnormal activity in the cortex of the cerebrum. When the cortex is known or found post mortem to be diseased or otherwise injured, the inference is reasonable, but it does not account for the fits. Disease and injury are by no means always followed by such severe disturbances, and in many epileptics no cause whatsoever is found for the fits. While the fits do not differ to any great extent, the auras and hallucinations do. Some patients experience gastric or other "sensations," some visual hallucinations, others auditory, tactile, or olfactory impressions, and a few have described "presences," desire to run, or a feeling of happiness. This would suggest, if we believe that the origin of the attacks is in the cortex: (1) that it is the cortex which enables all these varied activities to be experienced; and (2) that areas of the brain as widely separated as the cuneate and uncinate lobes are subject to the same form of malfunction. This may be so, but it would be more convincing to trace the tracts of those lobes to a point or area where they converge, and whence a disturbance might spread to any one of these areas and downward in such a way as to be widely effective. The basal ganglia of the diencephalon would satisfy this description. If they are the site of the lesion the premonitory experiences of the patients would depend on the proximity of specialised sensory neurones to the site of the disturbance, which of course would be constant though different in each individual. The spread of the disturbance, once it has begun, is rapid. Rushing upwards, it disorganises the higher functions of the brain and causes disassociation, which renders awareness of self and environment impossible; rushing downward over a wide area it gives rise to disorganised or incoördinated violent muscular activity. Head and Holmes have placed in the thalamus the origin not only of primitive emotional experiences but also of primitive sensory experiences. This is consonant with the facts in the majority of hallucinations of epileptics, and of all sufferers from night-terrors and migraine. Their hallucinations are primitive, and often lack the perceptional qualities of true senses, or of hallucinations of senses which might be supposed to originate in perceptual areas of the cortex.

On this assumption we can understand the psychologist's belief that an epileptic fit is an expression of horror, terror, or fury, but we cannot consider it to be a primary psychical disturbance, for we can indicate its area of origin and show it to be an hallucination of an emotion which is due to neuronic instability, probably in the thalamus and certainly in the basal ganglia. Dr. Shackle, in his note on night-terrors, said: "The sensation experienced can be but inadequately described as fear of the most paralysing and dreadful kind, no fear experienced in nightmares or real life having any relation to it whatsoever." Similar experiences have been related to the present writer in the same emphatic terms, and since some of the patients, though still the victims of these awful visitations, are no longer children, they are good witnesses. Like Dr. Shackle, they distinguish between the visual and intense emotional disturbances of nightmares and the pseudo-visions and emotional hallucinations of the night-terror. That the latter is due to neuronic disturbance in the areas of primitive sensation and emotion is probable.

The Cause of Neuronic Instability.

The basal ganglia have to govern the physical needs of the body—nutrition, self-protection, and reproduction. Government is performed largely through the autonomic nervous system and the endocrine system. The nutritional system is developed from the endoderm, the self-protective from the ectoderm, and the reproductive from the mesoderm, and from these tissues are developed the endocrine glands which work in conjunction with the autonomic nervous systems which govern them. Thus from the endodermal tissue, the anterior lobe of the hypophysis, the thyroids, parathyroids, thymus, and pancreas are budded off. Out of the ectoderm, which is devoted to self-protection, are developed the posterior lobe of the hypophysis, the chromaffin bodies, and the medulla of the suprarenal organs. The mesoderm is responsible for the gonads, which are developed with the cortex of the suprarenal organs—probably as a reproductive adjuvant—and the mesoderm system uses the endocrine organs of the other systems because its duty is to form the offspring which requires a moiety of them all. That the basal ganglia depend upon the secretions of the glands they govern for their anabolism—nutritive system—and for their katabolism—self-protective system—is probable. If this be so, then any neuronic instability in the basal ganglia may have its origin in one or other of these systems, and it is there we should look for the cause of night-terrors, epilepsy and migraine, if not of the psychoses also. These are, primarily, physical diseases, though argument might be used to show that abnormal and prolonged strain was the beginning of endocrine mal-function. To such an argument may be countered Adler's suggestion that the endocrine organs involved inherited a weakness, which, for the efficient fulfilment of their function, necessitated an over-compensation of the mind, which was thus exposed to undue impression and influence from environmental factors.

HOSPITAL COÖRDINATION IN NORTH STAFFORDSHIRE.—There are four important institutions in North Staffordshire serving a very large population—the Royal Infirmary, the Haywood Hospital, the Longton Cottage Hospital, and the Cripples' Aid Society. A committee of representatives of the four is considering the feasibility of a scheme of coördination, to be helped by a comprehensive contributory scheme. It is pointed out that, although the North Staffordshire Infirmary has recently added 42 beds, the provision of beds for the district is at present rather less than 1 per 1000, whereas it ought to be 3 per 1000.

Clinical and Laboratory Notes.

A CASE OF INTRACRANIAL HÆMORRHAGE FROM ARTERIAL MALFORMATION

By Bruce Maclean, M.D., M.R.C.P. Lond.,
CLINICAL ASSISTANT, NORTH STAFFORDSHIRE ROYAL INFIRMARY.

A FULL report on this type of hæmorrhage, under the name of Spontaneous Subarachnoid Hæmorrhage, has been given by Symonds,[1] who points out that the term "spontaneous" does not imply an absence of ascertainable cause but that it covers all cases of non-traumatic origin. As the presence of the blood in the subarachnoid space under these circumstances indicates either a primary hæmorrhage of the subarachnoid vessels or one that has found its way through cerebral tissue, we might, perhaps, allude to the condition as "intracranial." Further, in view of the description of the cause by Turnbull [2] as 'an inherent weakness due to a congenital abnormality in the structure of the arteries at their points of junction," it might be advisable to omit qualifying it as "spontaneous," and one can definitely exclude in the pathology such conditions as neoplasm, inflammation, infective endocarditis, blood and deficiency diseases. This case would appear worth recording on account of its rarity, inasmuch as death so delayed from an arterial source is very unusual.

The Case Described.

I was called in consultation to see a young man of previous good health, aged 29, a school teacher, who stated that while sitting downstairs he experienced a sensation as if something had burst in his head. He immediately rushed upstairs to seek assistance from his family, which he was able to do before collapsing on the bed. He had vomited before my arrival with relief. He looked pale and ill but was able, on effort, to discuss the events leading to the attack. Headache was severe and he resented interference. Examination revealed no typical signs usually associated with apoplexy (no palsies, rigidity, or abnormal reflexes), despite the fact that he had collapsed with temporary unconsciousness. The possibility of a sudden œdema of, or hæmorrhage into, a cerebral tumour came under review, as a warning against a lumbar puncture in the event of a fatal compression of the medulla from increased intracerebral tension. Any risk of syphilitic infection was emphatically denied. His father stated that they had partaken of "pork and beans" for supper, and that he himself had suffered nausea. A diagnosis of food poisoning was tentatively held.

The next morning I found him curled up in bed, but there was a general improvement, the outstanding symptoms being headache, pain behind his eyes, pain in the neck, lethargy, and a dislike of being disturbed. He was perfectly rational. Cramp was felt in both legs. Urine, pulse, temperature, blood pressure were normal. Re-examination of the nervous system revealed the following signs: Full flexion of the head was prevented by pain in the neck. On testing for Kernig's sign there was difficulty in producing complete extension at the knee. The left knee-jerk was more responsive than the right.

The exact diagnosis was puzzling, it being difficult to distinguish between food poisoning with meningismus from acute toxæmia, influenza with abdominal and encephalitic symptoms, and encephalitis lethargica. Cerebral tumour and meningitis from any cause could now be discarded owing to the sudden onset, absence of pyrexia, and general improvement. The possibility of intracranial hæmorrhage without any accompanying pathological state seemed to me remote. Agglutination reactions at the end of the week were negative to enteric and food poisoning bacilli.

Subsequent History and Post-mortem Finding.

The patient continued to improve daily, was out of bed in ten days and, on his own accord, returned to school a fortnight later. In four weeks from the commencement of his illness a similar attack developed, and although the lethargy was more marked, I am informed that the onset was comparatively slow, commencing with headache which drove him to bed. Confusion of thought developed to a slight extent next day, but all questions were answered rationally, and he gave a correct account of his previous attack. The following day he was admitted into the Leeds General Infirmary under Dr. Maxwell Telling, by whose kind permission I am able to supply the following information:—

"When first seen he presented nothing except a painful headache and a resentment of interference. After a little while the signs changed rather suddenly. He developed head retraction, squint, double Babinski sign, absent abdominal reflexes, Kernig's and Brudzinski's signs. As meningitis was suspected, especially as the headache was becoming intolerable, the cerebro-spinal fluid was liberated under greatly increased pressure, presenting a uniformly blood-stained appearance. Very little was allowed to escape. The hæmorrhage had been so severe as to cause coma and death the ensuing day. Post-mortem examination revealed around the meninges at the base altered blood, the result of an old extravasation. There was blood-clot of various ages, most of some standing, in the ventricles and in the floor of the skull. In the right frontal lobe was a mass of blood-clot with much old and new cerebral softening around it. The mass was fully the size of a large walnut. In the substance of the clot, and arising from the right anterior cerebral artery, could be demonstrated a ruptured aneurysm."

Commentary.

It would appear, therefore, that the original hæmorrhage had burst into the ventricles; this belief receives support from the age of the extravasation in the ventricles and the history of unconsciousness and vomiting at the onset. It is difficult to make this assertion in the face of the statement that "an intracerebral hæmorrhage sufficiently large to rupture into the ventricles or subarachnoid space would give rise to permanent cerebral damage (if such case ever recovers)."[1*] The aneurysm in this case probably arose at the bifurcation of the anterior cerebral and anterior communicating arteries; in this position it would be buried between the inner surfaces of the frontal lobes where there is absence of covering by arachnoid tissue. Consequently a rupture would force its way into the frontal lobes. It was afterwards ascertained that the patient was fond of athletics, being used to severe strain as a captain in tug-of-war teams, and I would contend that such excessive strain was a factor in developing his aneurysm at such an early age. It is quite possible for this structural defect to be of fairly common occurrence, and that, without severe exertion, would not give rise to aneurysm or rupture in the absence of arterial disease.

There is little reference to this subject in text-books on medicine, and it is questionable whether it should be confused with congenital aneurysms which are multiple, of small size, and situated chiefly on the circle of Willis, not necessarily favouring the junction of vessels. The favourite site of aneurysms resulting from defective arterial structure is at the fork formed by the anterior communicating and anterior cerebral arteries, and with few exceptions, post-mortem examination has revealed a single aneurysm. Cases arising in young people afford particular interest, and as the condition is not generally recognised in this country, there is bound to be great difficulty in its diagnostic interpretation. Obscure cases in the past have been ascribed to hæmorrhagic meningitis or encephalitis. On the continent a good deal of work has been devoted to its various clinical manifestations, and apart from seven cases recorded by Wilks in 1883, investigations were first published over here by Turnbull [2] in 1914, by Fearnsides [3] in 1916, and by Symonds [1**] in 1924. Associated with hæmorrhage into the subarachnoid cistern, characteristic changes in the cerebro-spinal fluid were described by Froin [4] in 1904. These may be summarised thus: There is increased pressure soon after the onset of hæmorrhage and the fluid contains blood. Specimens taken at intervals do not vary in the admixture of blood and cerebro-spinal fluid; they show no coagulum on standing, and the supernatant liquid is pink, brownish, or even yellow, according to the rate of hæmolysis. The last three features afford contrast

to those met with when dealing with accidental venous hæmorrhage arising during thecal puncture.

Diagnosis and Treatment.

The diagnosis can be simplified by recalling the following salient features: (1) Previous good health or history of a similar attack. (2) A sudden onset with outstanding symptoms of headache, collapse, lethargy, and pain in the back of the neck. (3) If conscious, the patient is rational. (4) Signs of (*a*) deep cerebral lesion, (*b*) cranial palsies, (*c*) meningeal irritation, (*d*) combination of (*a*), (*b*), and (*c*). (5) Absence of pyrexia in first few days. (6) In the absence of trauma the signs do not fit in with any other cerebral condition.

Confirmation of the diagnosis is obtained by carrying out intrathecal puncture, whereby the characteristic macroscopic appearances may be verified. An acute hæmorrhagic meningitis (including anthrax), might produce an even admixture of blood and cerebro-spinal fluid, but the presence of a fibrinous coagulum taken in conjunction with high temperature afford sufficient evidence.

I would allude also to three pathological conditions associated with "cerebro-meningeal hæmorrhage."

The first was originally described by Widal [5] as "*massive albuminuria*," which is present in a certain proportion of cases during the early stages of the illness and is transient in nature. It is evidently the outcome of shock and damage to the nervous system for the kidneys appear free from signs of disease post mortem, while I have found it present in other sudden cerebral disturbances, such as apoplexy and epilepsy. The second is *intra-ocular hæmorrhages* into the retina or vitreous, resulting from obstruction to the veins from the retina and optic nerve. Riddoch and Goulden [6] emphasise this clinical sign as the important diagnostic feature, but it has not been constantly witnessed by other observers.[7] [8] The third is *glycosuria*. This has been met with early in the attack, and is ascribed to reflex action from the controlling centres in the brain to the suprarenal cortex. The blood-sugar content is normal. The phenomenon may be correlated to the experiments carried out by Claude Bernard when glycosuria was produced by puncturing the floor of the fourth ventricle.

As regards treatment, it has been suggested that routine lumbar puncture should be performed in order to relieve the high pressure upon nervous tissue, but this procedure must first be carefully considered. The possibility of allowing the medulla to be forced down upon the foramen magnum on releasing the spinal pressure might easily invoke cessation of both respiration and heart beat. Further, a lowering of intrathecal tension might conceivably encourage bleeding from the site of rupture. One must be guided, therefore, by the severity of the symptoms indicating drainage for relief of pressure which is endangering life. Symonds states that "clinical evidence of intraventricular hæmorrhage should therefore be contra-indicated for this procedure, but that, later, it may be judiciously employed to relieve pain and to accelerate recovery." [1]

The prognosis must, of course, be uncertain; severe cases have been known to recover and remain in good health for years. Recurrence of symptoms is common, and any attack may prove fatal.

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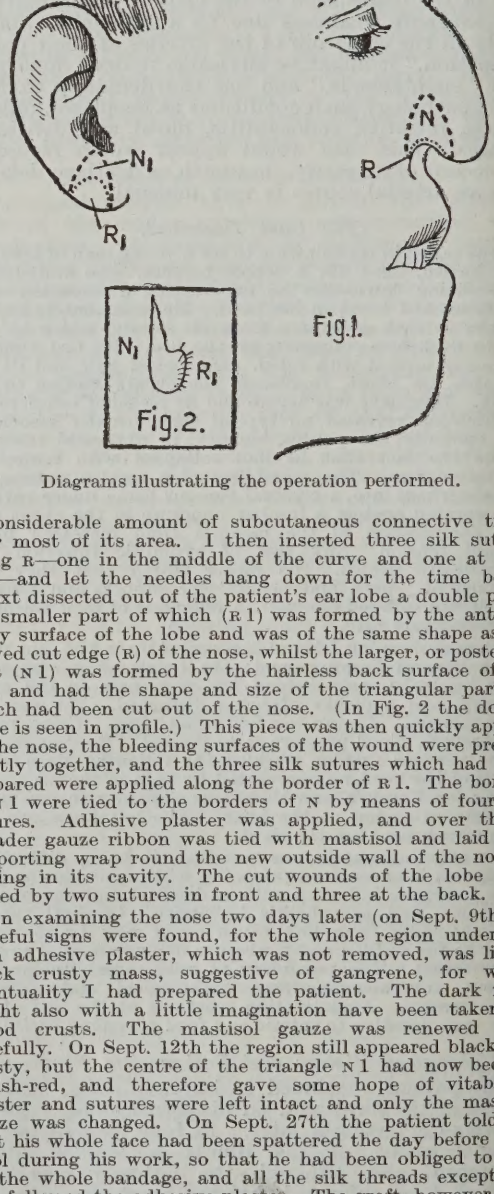
A NEW METHOD OF PARTIAL RHINOPLASTY.

By Dr. E. Dujardin,
COPENHAGEN.

In this method a triangular double piece of the lobus auriculi is applied so as to form one side of the nose and the outside wall of the nostril. The technique and treatment of the case were as follows.

The patient was a young farmer, 23 years of age, who at the age of 13 fell on the ice and injured his nose in such a way that a third of it, the tip and the outside walls of the nostrils, became gangrenous and fell off. In order to form an outside wall for the right nostril I proceeded as follows:—

After disinfecting by brushing with 5 per cent. thymol alcohol, and anæsthetising by novocaine-adrenalin, I cut off a thin skin margin along the lower curved border (see Fig. 1, R), as shown by the dotted line. Along the side of the remaining part of the nose I dissected off a triangular piece of skin (N), very thin towards the borders but retaining



Diagrams illustrating the operation performed.

a considerable amount of subcutaneous connective tissue over most of its area. I then inserted three silk sutures along R—one in the middle of the curve and one at each end—and let the needles hang down for the time being. I next dissected out of the patient's ear lobe a double piece, the smaller part of which (R 1) was formed by the anterior hairy surface of the lobe and was of the same shape as the curved cut edge (R) of the nose, whilst the larger, or posterior, part (N 1) was formed by the hairless back surface of the lobe and had the shape and size of the triangular part (N) which had been cut out of the nose. (In Fig. 2 the double piece is seen in profile.) This piece was then quickly applied to the nose, the bleeding surfaces of the wound were pressed tightly together, and the three silk sutures which had been prepared were applied along the border of R 1. The borders of N 1 were tied to the borders of N by means of four silk sutures. Adhesive plaster was applied, and over this a broader gauze ribbon was tied with mastisol and laid as a supporting wrap round the new outside wall of the nostril, ending in its cavity. The cut wounds of the lobe were joined by two sutures in front and three at the back.

On examining the nose two days later (on Sept. 9th) no hopeful signs were found, for the whole region under the thin adhesive plaster, which was not removed, was like a black crusty mass, suggestive of gangrene, for which eventuality I had prepared the patient. The dark mass might also with a little imagination have been taken for blood crusts. The mastisol gauze was renewed very carefully. On Sept. 12th the region still appeared black and crusty, but the centre of the triangle N 1 had now become bluish-red, and therefore gave some hope of vitability. Plaster and sutures were left intact and only the mastisol gauze was changed. On Sept. 27th the patient told me that his whole face had been spattered the day before with lysol during his work, so that he had been obliged to tear off the whole bandage, and all the silk threads except one had followed the adhesive plaster. The graft, however, had taken, and forms a fairly good passage from the nose to

the cheek, has a natural border covered with epidermis downwards, and is hairy on the surface towards the cavity of the nose.

The advantages of this method of partial rhinoplasty, which, I believe, has not been practised before, are the good cosmetic result and the possibility of operating under local anæsthesia without a subseqent Thiersch transplantation to cover the region from which the piece of skin has been taken. In the case referred to, the lobe of the ear healed pretty well. The patient himself thinks that his ear is improved; at any rate it is smaller.

A NOTE ON
THE IMMEDIATE REPAIR OF THE TORN PERINEUM UNDER LOCAL ANÆSTHESIA.

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THE immediate repair of the perineum torn in labour often presents some difficulty in so far as anæsthesia is concerned, and the difficulty is naturally greater in general than in hospital practice, where all facilities for general anæsthesia are available. Without anæsthesia of some kind it is impossible to repair the perineum properly and with strict surgical asepsis. In University College Hospital we have for the past six months been using local anæsthesia entirely for this work and with such success that I feel the method should be generally known and used.

Technique.—The perineum is repaired only after the placenta has been expelled, as suture cannot be carried out or even the stitches nicely inserted before. The patient is put in the lithotomy position, the legs being supported, in private practice, by assistants or by a lithotomy strap of strong webbing, such as can be bought from most instrument makers. The operation area having been cleansed and draped in accordance with modern surgical requirements, the wound in the vagina is exposed from base to apex, together with its continuation in the perineal body. About 4 to 6 drachms of a 2 per cent. solution of novocaine are prepared and 1 minim of 1 in 1000 solution of adrenalin chloride is added for each drachm of the novocaine. A gauze swab soaked in this solution is laid on the raw surface of the wound while the syringe is being charged. An ordinary hypodermic syringe is used with a fairly long needle. In injecting the solution the needle is entered through the raw surface (by this time anæsthetised) immediately under the vaginal mucous membrane or skin of the perineal body. The needle is now carried horizontally outwards immediately underneath the skin (or mucous membrane when infiltrating the vagina) infiltrating as it penetrates so that a weal is formed, the skin overlying the needle becoming slightly œdematous. The infiltration is carried out on both sides at points about half an inch apart until both vagina and perineal body are treated. The injection itself causes no pain if the torn surface has been previously anæsthetised by the novocaine-soaked swab as above described. Suturing can then be proceeded with leisurely. Interrupted catgut sutures are inserted in the posterior vaginal wall, starting at the apex and working downwards. If the tear in the perineal body is at all deep it is better to insert three or four buried interrupted catgut sutures to the depth of the wound so as to bring together the levator ani muscles. Finally, four or five silkworm-gut sutures are inserted through the skin surface of the perineal body. These should take a wide bite on each side, should go deep to the deep surface of the wound so that no dead space is left, and they should not be tightly tied. Their ends are left long and knotted together. A sterile gauze dressing and vulval pad are then put on. While inserting the stitches it is better to ask someone to talk to the patient in order to distract her attention, thus getting good relaxation. The total quantity of novocaine solution used, including that taken up by the gauze swab, is about 4 to 6 drachms, depending on the extent of the tear.

After-treatment.—The patient is allowed to sit up in bed next day. After the bowels are emptied or urine passed, the vulva is sponged with 1 in 4000 solution of perchloride of mercury. No dusting-powder is used, and the patient is not douched. On the evening of the second day 2 tablespoonfuls of liquid paraffin are given; this is repeated in the morning and at noon of the third day, and on the evening of this day 1 oz. of castor oil is given. The bowels act on the morning of the fourth day, and no enema is required or given. On the tenth day the silkworm-gut stitches are removed.

No originality is claimed for the use of local anæsthesia in immediate perineal repair, but in several text-books of obstetrics consulted I can find no mention of it. The advantage of the method is that perfect anæsthesia and relaxation are obtained without the administration of a general anæsthetic with its attendant worry, risk, and subsequent vomiting and discomfort. Healing has been in all cases good.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

A MEETING of this Section was held on June 15th, Mr. Comyns Berkeley, the President, in the chair.

Prof. B. Stroganoff (Leningrad) communicated a paper, which was read by Mr. W. Gilliatt, on the

Standard of Results in the Treatment of Eclampsia.

Prof. Stroganoff began by quoting figures from various countries to prove that eclampsia was still one of the greatest dangers that might befall the child-bearing woman. In the United States 5000 women died of it annually and, while 6000 died of puerperal sepsis, it was unusual in these cases to lose the child as well. In eclampsia as many babies as mothers died, so that the total loss of life was much greater. Lees had stated that 25,000 women died annually in childbirth, and Moscher had estimated that one woman in every 1000 lost her life. Dr. Janet Campbell's figures for this country put the rate at 4·11 per 1000, or one in every 342. Improvement was in progress in Germany as the result of adopting the Stroganoff method (the removal of irritating influences, narcotics, and the maintenance of the functions of the kidneys, skin, lungs, and heart). Prof. Zweifel, of Vienna, had had a mortality of 8·5 per cent. in 316 cases, and Prof. Leopold had reduced his maternal mortality from 19 per cent. to 8 per cent. and the fœtal mortality from 55·7 per cent. to 18·6 per cent. Jacobs, using the prophylactic method, had only had three deaths in 48 cases; two had been moribund on admission and one had died of inflammation of the lungs. Not one of them had had a single fit after the beginning of treatment. In America Williams, at the Johns Hopkins Hospital, had reduced mortality from 22·8 per cent. to 13·3 per cent. Prof. Stroganoff's own figures for 360 cases showed a maternal mortality of 6·6 per cent. and a fœtal mortality of 21·6 per cent. In his opinion the prophylactic method, properly applied, should give a mortality-rate in eclampsia of between 1 and 2 per cent., or, if neglected and infected cases were included, of between 2·5 and 4 per cent. As yet no one had carried out the treatment in a sufficient number of cases. Some people had had bad results, but this was because the method was not used strictly or correctly. Altered régime meant impaired

results. A fixed scheme of administration of narcotics was no part of the method, and it was essential to vary the plan with the patient's condition. Where the results had been bad he had usually found a want of individuality.

Prof. Stroganoff's own most recent general mortality-rate was 2·6 per cent. Out of 300 cases eight had died, and in only one had it been impossible to control the convulsions. Her heart had been found post mortem to be permeated with fat, and, among other disabilities, she had had bronchitis, perisplenitis, chronic nephritis, and multiple hæmorrhages. The fœtal mortality was 6 per cent. In 40·3 per cent. of the 300 cases there had not been a single fit after commencing treatment, and only 15 per cent. had had four or more fits. No maternal deaths had been due to the treatment; on the other hand, 4 per cent. of mothers died after forced delivery. The operative deliveries had only been 50 per cent. Rapid recovery had been general. He analysed the eight deaths as follows: (1) Intractable hæmorrhage. (2) Two fits at home, eight in hospital. Forty-eight hours in labour, died of septicæmia. (3) Placenta removed manually and uterus ruptured. (4) One fit before admission and four after delivery; venesection, heart weak; fits controlled, died of double pneumonia. (5) Several fits at home, admitted comatose, stopped breathing under chloroform; four more fits, controlled, died two days later. (6) Sixteen fits at home, admitted moribund. Eclampsia came on after labour. (7) Two fits at home, deep coma, pulse-rate 110 and respiration-rate 40 on admission. No fits after admission, but went blue and died suddenly. (8) One fit at home and 11 in hospital, two after labour. Temperature 101·8, rising to 104; inflammation of the lungs and pleurisy.

Prof. Stroganoff then quoted a number of statistics from different countries to show the improvement since the adoption of his method. Eclampsia in hospital appeared to be more severe, but the results were more favourable. He considered that Cæsarean section often caused death and nearly always injured the patient unnecessarily. The prophylactic method was not ideal and could be improved; nevertheless its results were so much better than those of other methods that to many people they seemed unattainable. The quartz lamp was very important for the eclamptic patient. It involved no danger to the heart or nervous system and produced marked vasodilatation. While chloral hydrate could not be dispensed with, luminal or hedonal might be substituted for it after the fits had been controlled for eight or ten hours or where chloral was not absorbed. These two preparations had the advantage of not being dangerous to the heart and of being capable of administration subcutaneously or intravenously. There was some doubt whether chloral given rectally was absorbed. His opinion of magnesium sulphate was not favourable. About 20,000 lives were lost every year from eclampsia. The best results in this condition were achieved by the prophylactic method, but hardly anyone had used it strictly or fully. If they had, their results would have been better. The technique was very important and could only be learned by the bedside. Failing that, however the telephone consultation was a great help.

Discussion.

The PRESIDENT said that in this country it was not a fact that Prof. Stroganoff's results were unappreciated or that his treatment was untried. He (Prof. Stroganoff) had been most anxious that this paper should be read in order that the importance of the method might again be insisted on in the medical press.

Prof. FLEMING GOW spoke of conditions in India, where the obstetrician did not usually see his patient until she had had eight or ten fits and was comatose. The mortality was well over 20 per cent., but had decreased slightly since the adoption of a modified Stroganoff method. There seemed to be local variations. In Madras the usual method was venesection with Stroganoff; in Bengal, however, it was most unusual to find a blood pressure over 160, so that venesection was little used. Chloral hydrate was given in rectal saline. Cæsarean section for eclampsia had been abandoned, but was useful when eclampsia was complicated with the under-developed pelvis of the young primipara of 13 or 14.

Prof. MCILROY asked what Prof. Stroganoff's latest treatment was, and recalled that when he was in England there had been almost no cases of eclampsia for him to treat. He had ascribed the rarity of the condition to antenatal and prophylactic treatment. There ought to be a standardised form of treatment, Prof. McIlroy thought, particularly as eclampsia was largely treated by junior obstetricians. For about three years there had been no case of eclampsia at the Royal Free Hospital, and then a fulminating case had occurred. These must always turn up from time to time and provide a certain mortality.

Dr. E. H. ALTOUNYAN described the case of an Armenian girl of 18 who had failed to respond to chloral, venesection, and evacuation of the uterus, but who had benefited by intravenous administration of glucose, 300 g. in a 4·7 per cent. solution in distilled water. He had successfully repeated this treatment for a girl of 10 suffering from toxæmic nephritis after chicken-pox.

Mr. L. C. RIVETT said that the only case of eclampsia Prof. Stroganoff had found in London had been at Queen Charlotte's Hospital, where full record had been kept. Since then feeble efforts had been made to carry out his treatment, and it had been modified by every sister, every resident, and every member of the staff. In consequence the results could not be reported. At St. Mary's Hospital for the East End, however, Mr. Rivett had managed to keep his own modification unmodified and had had only three deaths in 44 cases. He endorsed Prof. McIlroy's plea for a uniform treatment. In answer to a question, he said that his modification included the use of chloroform.

Dr. DOROTHY LOGAN compared the value of glucose with the effect of cane sugar as a diuretic in certain cardiac cases, and asked for information about the excretion of chlorides. She cited a case where a patient who was under observation in hospital for another condition, and had developed eclampsia without any warning, despite the daily urine tests.

Mr. GILLIATT said that the chloride excretion was the basis of the anti-salt diet. He described a diabetic woman who became pregnant with twins. During her pregnancy she had required less insulin than before or after; apparently the pancreases of her babies were "doing their bit" for her. She had suddenly stopped excreting chlorides and almost "blew up" with enormous œdema, extending up to her waist. She had never had a fit nor albuminuria. Cæsarean section had been successful.

The PRESIDENT mentioned the successful results obtained at the Zürich Clinic, where Cæsarean section was performed directly the patient had the first fit.

Prof. LOUISE MCILROY reported a case of

Dysmenorrhœa due to Calcification of the Ovary.

The patient, aged 24, had suffered for a year from pain before, during, and after the period, lasting in all about a fortnight. She had consulted her doctor about a year ago because the pain was getting worse and the flow increasing. She had also suffered from dyspepsia. The menstrual pain was worse when she was sitting down than when she was moving about. All remedies had failed and a rectal examination had revealed a stony-hard tumour in the pelvis. The girl had looked perfectly well when seen by Prof. McIlroy. Operation had revealed a hard mass lying free in the pouch of Douglas with the tube forming its pedicle. Dark veins ran over its surface; it was too hard to cut, and X ray showed practically nothing. The patient's recovery had been uninterrupted, and she wrote this week that she had never had ache or pain since the operation, and had been married six months.

The PRESIDENT remarked that he had never seen a similar case, and asked why the pain had been worse whilst sitting down.—Prof. MCILROY replied that this was probably because the tumour was right down in the pouch of Douglas. She had not been able to find any similar cases in the literature.—Dr. F. E. TAYLOR

suggested that in such a young patient the tumour was more probably a degenerated dermoid than a fibroid.

Mr. CLIFFORD WHITE read a short communication on

Vulval Metastases from Pelvic Growths.

He said that it was of clinical importance to realise that metastases of the lowest part of the vagina might occur in cases of carcinoma of the uterus and ovary. In the cases he reported there was no question of gross involvement of the vaginal vault.

The first patient was a 7-para of 56 seen in December, 1926. Her menopause had taken place eight years before, and for four months she had had a blood-stained discharge. There was a tumour in the lower abdomen and what appeared to be a small papilloma in the vulva. After three weeks' treatment for diabetes she was operated on, and the right ovary was found to be 10 cm. in diameter, while the left was about 5 cm. Both were adherent to the uterus and intestine. The tumours and the body of the uterus were removed and no other foci were found in the abdomen. The nodule in the vaginal vault had by now increased in size to some 3×2 cm., and was raised and purple. It proved to be an adeno-carcinoma identical with that of the ovary. The patient died three months later.

The second case, a multipara of 70, was practically moribund when first seen. She had had abdominal pain and swelling and a blood-stained discharge. In addition to a semi-solid tumour and free fluid in the peritoneum she had a soft mauve nodule just inside the vulva. She died in a few days and no pathological material could be secured, but the clinical appearances were almost exactly like those of Case 1.

The third patient, seen in May, 1927, was a multipara of 40 who had had multiple uterine fibroids causing menorrhagia. She had had a panhysterectomy and a small adeno-carcinoma had been found in the body of the uterus after removal. She had been well until February of 1928, when she had noticed a pink discharge, and a pale purple, soft, raised growth identical with those of the two previous cases. The nodule proved to be a typical adeno-carcinoma like that of the uterus. The inguinal glands were excised and she was treated with deep X rays.

Mr. White said he had never met a case before the first of these three, and that their occurrence was difficult to explain. The literature recorded some secondary deposits of chorion epithelioma, but he had found no account of adeno-carcinomatous metastases. He would like to know if there was any anatomical explanation of their occurrence.

The PRESIDENT said he had seen cases of chorion epithelioma, but never cases like these.

Dr. CHRISTIE BROWN described three similar cases seen at the London Hospital. One was an adeno-carcinoma in a woman whose uterus had been removed for this form of growth 15 months before; two were secondary hypernephromata implanted just behind the urethra, possibly carried there by the urinary tract.

Reviews and Notices of Books.

THE NELSON LOOSE-LEAF LIVING SURGERY.

Edited by ALLEN O. WHIPPLE, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University; Director of Surgical Service, Presbyterian Hospital, New York. Associate Editor, FORDYCE B. ST. JOHN, M.D., Professor of Surgery, College of Physicians and Surgeons, Columbia University, New York. Volumes I.–IV. New York: Thomas Nelson and Sons. 1928. $125 for complete set of 9 volumes.

BOOKS on surgery can be classified roughly into four types. There is the text-book which appeals to the undergraduate, the treatise for the general practitioner, the eclectic work of limited scope for the practitioner-surgeon, and, finally, the comprehensive system which strives to keep the consulting surgeon up to date, leaving out no methods or observations which have the slightest pretensions to consideration from the point of view of advancing science or art. The work under review belongs to the last class.

The task of compiling such a system must always be beset with endless difficulties, and very few works attain or maintain the standard set up by their editors. There is bound to be unevenness in the presentation of different branches of the subject when the services of numerous contributors must be requisitioned. It is high praise, therefore, to say that, judging from the first four volumes, this system of surgery bids fair to achieve very great success. There is not a single section that does not reach a high standard of effort, and the selection of authors has been admirable, the list including many of the greatest names in American surgery. How large the total number of contributors must be can be gauged from the fact that in these four volumes alone (there are to be eight in the completed work) more than 40 authors supply articles.

In Vol. I., physiology, pathology, bacteriology, and anæsthesia are discussed. Notable contributions are by J. E. Sweet on physiology, and by F. L. Meleney, who gives an account of the bacteriological and immunological aspects of surgery. Sweet's article is distinctive because of its clear and critical outlook, Meleney's because he brings to life a part of surgery which is often tedious to read about, by illustrating his statements with actual case histories. The names of J. T. Gwathmey and Gaston Labat as authors of the articles on general and local anæsthetic methods suffices to guarantee that these subjects are adequately dealt with. The arrangement of the matter in this volume, and indeed in the other volumes, is open to criticism; it is not always easy to find the actual information desired. For instance, there is no clear, full account of tetanus in any one place. Excessive subdivision on the one hand, and occasional sweeping generalisations on the other, must be accounted among the few drawbacks of this work. They complicate rather than simplify the presentation of surgery, especially when the services of so very many writers are involved. Thus, in Vol. II. appear articles on the surgery of tuberculosis and the surgery of malignant disease. In this country we do not think of surgery in such compartments; they do not seem natural divisions. Yet it must be admitted that one of the most interesting sections in the book is that by Ashhurst on the surgery of malignant disease, and the reader of this chapter may feel that there was justification for creating such a section. The chapter in this volume by Wilder Penfield on the principles of the pathology of neuro-surgery is exceptionally good, while G. H. Semken contributes an unusually clear account of the surgery of the neck. G. W. Crile, C. A. Elsberg, and B. Stookey also write in this volume.

Vol. III. contains orthopædic surgery, the surgery of the limbs and vascular system, and is less satisfactory than the rest. The orthopædic section particularly is sketchy, and practical details of some of the simpler orthopædic procedures are lacking. With regard to dislocations and fractures, from such a large treatise the reader expects help in real practical difficulties, and does not always get it. For instance, there is no description of the open operation for an unreduced dislocation of the shoulder, nor of one for habitual dislocation. In a special section on anæsthesia in the reduction of fractures local novocaine anæsthesia is extolled, but no description of how to apply this method is to be found. Spinal anæsthesia for leg fractures is not mentioned; perhaps the author thinks it too dangerous to be justifiable. Hugh Auchincloss's excellent article on the surgery of the hand is illustrated with a really splendid collection of drawings; it is marred only by one omission, the failure to tell us more about the restoration of function in the hand after septic infections, and the prognosis in these cases. An adequate account of amputations is supplied, but the chapters on varicose veins and osteomyelitis are not inspiring. There seems to be no mention of the injection treatment of varicose veins, and the reader has to turn

to Leriche's scholarly article on the vasomotor changes in blood-vessels to find an account of his method of treating varicose ulcers. It is interesting to read that Leriche has abandoned operations which remove sympathetic ganglia. Vol. IV. contains the surgery of the lymphatic system, the œsophagus, heart, pericardium, and hernia. In this volume we return to a uniformly high standard of achievement. The reader is not likely to search in vain for desired information in Torek's article on the œsophagus, or S. Erdman's article on hernia, whilst E. C. Cutler and C. S. Beck have written perhaps the fullest and most up-to-date account of heart surgery that exists.

The loose-leaf system has not only the great advantage of allowing new advances to be added from time to time, but it permits the revision of deficiencies which are bound to be present in any large book of composite authorship. If the remainder of this great work fulfils the promise of these earlier published parts, an extraordinarily reliable and satisfying treatise on present-day surgery will be at our disposal.

EPILEPSY.

By L. J. J. MUSKENS, M.D., Amsterdam. London: Baillière, Tindall and Cox. 1928. Pp. 435. 27*s.* 6*d.*

THE English edition of this book is not a mere translation, but has been prepared, revised, and brought up to date under the close supervision of the author by Mrs. W. Shaw Dunn. There can be few investigators as well-fitted as Dr. Muskens to write a book which embraces both the physiological and the clinical aspects of epilepsy. The volume under review is the fruit of many years devoted not only to the experimental study of convulsions, but also to clinical research upon epilepsy which began when the author was a pupil of Hughlings Jackson, Gowers, and Horsley. The result is a contribution to knowledge which, though distinctive in its outlook, is nevertheless in the direct line of the English tradition of neurology, and the fact that Sir Charles Sherrington has written a foreword is sufficient evidence of its importance from the physiological standpoint.

Part 1 of the book consists of an investigation of the fits induced in normal animals by convulsant drugs, especially by monobromide of camphor. It begins with a study of the "myoclonic reflex," which is the foundation-stone of the author's conception of the epileptic fit, and is the name given to a localised shock-like muscular contraction which occurs in a small proportion of normal cats in response to a tactile stimulus, such as an unexpected touch upon the skin of the back or a limb, or an acoustic stimulus such as a loud noise. Dr. Muskens found that monobromide of camphor enabled this reflex to be elicited in all cats, and that increasing doses of the drug caused: (1) a spread of the motor response so that all the muscles of the body might become involved, (2) a shortening of the refractory period, and (3) a tendency to after-discharge. Further, animals under the influence of this convulsant might exhibit spontaneous myoclonic movements which occurred in the absence of tactile and acoustic stimuli, and after sufficiently large doses they suffered from generalised epileptiform convulsions with loss of consciousness. These facts lead Dr. Muskens to take the view that the epileptic attack is the "central after-discharge" of a myoclonic reflex, which occurs when the maximal exaltation of the reflex is produced by a convulsant drug. In Part 2 the author describes the effect of experimental lesions of different parts of the nervous system upon the character of convulsions experimentally produced. Part 3 is devoted to epilepsy in man, ætiology, clinical features, and treatment being discussed. In dealing with human epilepsy Dr. Muskens naturally lays stress upon myoclonic epilepsy in its varied forms and the occurrence of myoclonic jerks from time to time in patients subject to major epileptic attacks, regarding these as phenomena which link epilepsy in man with experimental convulsions in animals.

The most important part of the book is the author's experimental work and the theory of the nature of epilepsy which he builds upon it. He has undoubtedly shown that a progressive heightening of reflex excitability precedes the development of the fits induced in animals by convulsant drugs, and is associated with a lowering of the threshold of different parts of the brain to faradic stimulation. This is a strong argument in favour of the theory that such convulsions are essentially widespread neural discharges; it does not necessarily follow, however, that the convulsion is of a reflex nature, a view which does not account for the associated loss of consciousness. Neither are the tonic elements of the epileptic fit covered by Dr. Muskens's theory; he proposes to regard these as a fusion of the clonic movements during their most explosive phase. He does not discuss the nature of the purely tonic fits (Hughlings Jackson's "cerebellar fits") which sometimes occur in man and which seem hardly explicable as a metamorphosis of myoclonic movements. Dr. Muskens has not escaped a further difficulty which besets all experimental investigators of epilepsy. Convulsions induced by drugs are certainly toxic and the view that the fit detoxicates the animal is permissible, though it may seem unduly teleological. But it is not justifiable to conclude without independent evidence, which has never been brought forward, that epileptic fits in man are also toxic in origin.

Many neurologists will consider that Dr. Muskens's physiological explanation of a convulsion is too simple and does not sufficiently take account of the complexity and multiformity of fits both in animals and in man. However, he has produced an outstanding contribution to the experimental study of epilepsy, and has submitted a sound and well-balanced discussion of its clinical aspects which is well worth reading.

A TEXT-BOOK OF BIOCHEMISTRY.

For Students of Medicine and Science. By A. T. CAMERON, M.A., D.Sc. Edin., F.I.C., F.R.S.C., Professor of Biochemistry, Faculty of Medicine, University of Manitoba. London: J. and A. Churchill. 1928. Pp. 462. 15*s.*

FEW English text-books have covered the same ground as this one by Prof. Cameron, which is worthy of attention. It is a well-packed volume of 450 pages, and deals adequately with the subject of biochemistry as a whole, and should be of great value to medical and physiological students. The first section consists of a well-written introduction and two chapters dealing with catalysis and pH respectively. In the second section there is a series of chapters on the biochemistry of the foodstuffs and their derivatives. The greater part of this is well-worn ground, and the author perpetuates one or two traditional errors that have appeared in text-books from time immemorial. For example, on p. 101 he states that "histidine is the only amino-acid to give a biuret reaction." We wonder how many of the people who have repeated this statement have actually tried the reaction. The third part of the book deals with the chemistry of digestion, the circulation, and the excreta. Then follows a long section devoted to intermediate metabolism, which, on the whole, is a very good summary of what is already known of this branch of the subject; the paragraph on insulin is rather disappointing. The fifth section contains two chapters, one on the chemistry of reproduction, and the other—a very short one—on the controlling agents of the metabolic processes. Section VI., on quantitative metabolism, includes descriptions and photographs of the Russell Sage calorimeter for the accurate estimation of basal metabolism. There is also a more adequate chapter on diet than is usually found in a text-book of this description. The author has included a few chapters

on "borderline subjects" in the last section, in an attempt to "break down the watertight compartments of the modern sciences." These have proved of particular interest and add considerably to the value of the book.

Prof. Cameron writes well, giving a clear idea of the scope and aims of biochemistry, and at the same time as much detailed and technical information as is necessary for the student. Trouble has been taken to make clear the meanings and sources of some of the very technical terms. Such an excellent book well deserves the success which Prof. Swale Vincent, in a foreword, desires for it.

ACUTE ABDOMINAL DISEASE.

Clinical Researches in Acute Abdominal Disease. Second edition. By ZACHARY COPE, F.R.C.S. Eng. Senior Surgeon to Out-patients, St. Mary's Hospital. London: Humphrey Milford, Oxford University Press. 1927. Pp. 214. 10*s.* 6*d.*

THE fact that this volume has so soon required a second edition is evidence of the interest it has aroused. It consists of a series of short articles on various points connected with acute abdominal disease. They are all original and valuable for their practical suggestions. Of the new chapters which appear in this edition, those on extravasation of bile and on shock are of the greatest interest. Surgeons may not agree with the author's views on shock, but they will appreciate the importance of the author's suggestions for its prevention and relief. The book should be studied by all who may have to deal with acute abdominal emergencies.

TRAVAUX ET MÉMOIRES.

Tome deuxième. By PIERRE MARIE. Paris: Masson et Cie. 1928. Pp. 393. Fr.30.

THE second volume of Prof. Pierre Marie's reprinted contributions contains his work on the Charcot-Marie variety of amyotrophy, on hereditary cerebellar ataxia and cerebral lacunes, and on more than 40 other topics of neurological and general interest. Those in all countries who have been pupils of this master of neurology, or who have followed his clinicopathological method, will welcome the chance of possessing in book form his opera omnia, which cover a period of 40 years and more, couched in a scientific language of conspicuous clarity, and representing an abiding addition to neurological learning such as few have ever equalled.

POSTURAL REFLEXES IN MAN.

Die Lagereflexe des Menschen. By HANS HOFF and PAUL SCHILDER, Psychiatric-Neurological Clinic, University of Vienna. Vienna: Julius Springer. With 20 illustrations. Pp. 182. R.M.12.

THE impetus given to clinical neurology by the physiological work of the late Prof. Magnus and his collaborators is having its effect in the output of clinical researches dealing with postural and correcting (or righting) reflexes as seen in man in normal and diseased states. To this study the slender monograph of Dr. Hoff and Prof. Schiller forms an appropriate contribution. They have made a special investigation of such reflexes in normal persons at different ages (infants, juveniles, adults), and have occupied themselves with the behaviour of these reflex reactions in various clinical conditions (cerebellar lesions, chorea, tabes, athetosis, hemiplegia, Parkinson's disease, epilepsy, the psychoses, and so forth). Several of their clinical tests are ingenious and may be new to English neurologists; at the same time it is evident that the application of the whole range of test reactions to some at least of the cases here described is comparatively useless. The authors seem themselves to be aware of this from their frank admission that a given reflex reaction has in such and such a case "no practical significance." Other investigations in their series contain no novelty and constitute merely an elaboration of some accepted phenomena, for example, those which bring out the physiological disorder of cerebellar disease. A summary at the end of the brochure deals in tabular fashion with some 20 types of reaction, subjected to painstaking scrutiny. A detailed criticism of the findings in the various nervous conditions already mentioned would lead to a highly technical discussion; we may, however, admit the observational value of the author's work without assenting to their interpretation of it in terms of Magnus and de Kleijn reflexes.

ACUTE APLASTIC ANÆMIA.

By A. HAYES SMITH. London: H. K. Lewis and Co. 1928. Pp. 80. 6*s.*

THIS book contains a detailed account of a case of aplastic anæmia with recovery occurring in a child aged 2 years. Numerous therapeutic products of one sort and another were used in the treatment, including a preparation of liver for subcutaneous injection. The author attributes recovery to this last, and therefrom deduces the existence of a liver "hormone" having an influence upon the bone-marrow. In the light of recent experience few will be found to quarrel with this conclusion, but the steps by which the author attains it are open to criticism. He quotes from the literature two further cases of aplastic anæmia in children in which recovery occurred without the use of liver. It is the experience of most of those who have had occasion to deal with this condition since liver therapy for pernicious anæmia came into vogue that it exercises no influence upon the course of anæmia of this type.

FRACTURES AND DISLOCATIONS.

Fracturen und Luxationen. Ein Kurzgefasstes Lehrbuch für Ärzte und Studierende von Dr. Med. K. H. BAUER, A.O. Professor für Chirurgie an der Universität Göttingen. Berlin: Julius Springer. 1927. With 237 illustrations. Pp. 236. R.M.16.80.

THIS book, as its title implies, is a manual for students and practitioners and makes no pretension to any extensive exposition of the subject. The pathology of lesions bulks larger than the treatment, but the therapeutic measures recommended are sound and, generally speaking, are within the reach of the general practitioner. The illustrations are good and clear. Figs. 208 and 209, which purport to represent the walking splint of Bruns, are really representations of Thomas's knee-splint and patten. The section on operative treatment of fractures is very meagre. Tongs extension is recommended, but the methods of Lane, Hey Groves, Delbet, and Albee are ignored, probably because they require operative facilities not often within the reach of a general practitioner. Dr. Bauer is still impressed by fear of pneumonia and other troubles which were formerly the bugbear of the surgeon who had to treat fractured femur in the elderly, although up-to-date surgeons such as Delbet keep their cases of fracture of the neck of the femur recumbent for three months and are able to record an almost negligible mortality.

MEDICAL TUBERCULOSIS IN INFANCY.

La Tuberculose Médicale de l'Enfance. By M. PÉHU and A. DUFOURT. Paris: Gastoin Doin and Cie. 1927. Pp. 732. Fr.75.

Drs. Péhu and Dufourt have produced an excellent volume on the tuberculosis of infancy from the point of view of the physician. No attempt is made to deal with surgical tuberculosis. The book covers a wide range and attention is paid to those details which the practitioner needs so much but does not always get in text-books. The information given is well up-to-date; even the new filtrable virus work being briefly described. Social hygiene and

preventive measures which form a very large part of the study of infantile tuberculosis, are fully dealt with, such efforts as the Graucher system being clearly described. The clinical pathology in the book is disappointing and the information given on treatment is not as full as it might be. An appendix of illustrative X ray plates is given, the index is good, and bibliography will satisfy the research student. No illustrations are given in the text. On the whole, this is a welcome relief; books on tuberculosis, as a rule, are overweighted by the large number of uninspiring reproductions of apparatus which convey little to the reader. We can recommend this book as a piece of conscientious work. It is written clearly and logically and is a model of condensation.

PRINCIPLES OF BACTERIOLOGY.

By A. A. EISENBERG. Fourth edition. London: Henry Kimpton. 1928. Pp. 228, with 40 text figures. 10*s.* 6*d.*

THIS excellent book would be better called "Elements" than "Principles"; it is a guide across the threshold of bacteriology and has nothing to do with the general propositions to which that science may ultimately reduce itself. It has been written, primarily, for use in training schools for nurses in the United States; and devotes a good deal of space to practical details, contemplating the possibility (already we believe to some extent realised in practice) that nurses may also function as laboratory assistants. Whether it will be of value for the same purpose in the more conservative English schools is perhaps open to question, but it is a good introduction to practical medical bacteriology for laboratory attendants, elementary students and anyone else who wants to get some knowledge of the subject, and is prepared to take a little trouble about it.

PHARMACOTHERAPEUTICS.

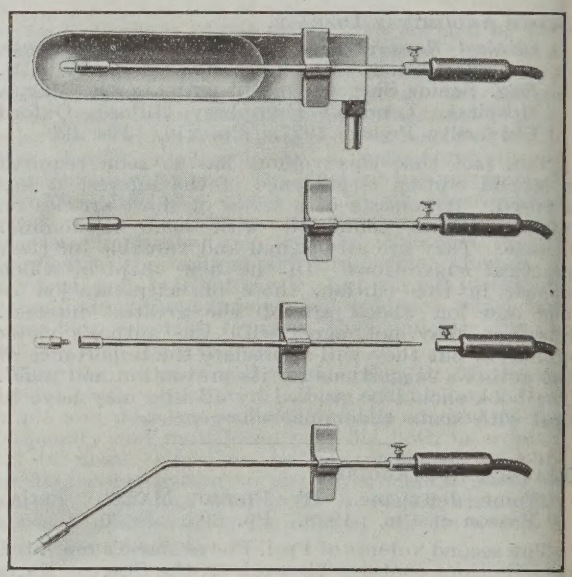
By S. SOLIS-COHEN, M.D., and T. S. GITHENS, M.D. London and New York: D. Appleton and Co. 1928. Pp. 2009. 63*s.*

THE first 400 pages of this book are given up to such subjects as drug influence, assay, and the sources and preparation of drugs. Valuable chapters are included on prognostic indications, symptomatic indications, absorption, elimination, and incompatibility. Under the heading of "Schools of Medicine" we are told the theory and practice of homœopathy, eclecticism, and dosimetry. The remaining 1600 pages are devoted to a systematic description of groups of drugs. Under each heading the history, chemistry, materia medica, therapeutics, and toxic action of the drug concerned are discussed. The authors have been most thorough and are well up to date. For example, a critical discussion of the use of such drugs as quinidine sulphate and phenylhydrazine hydrochloride is included, and also the value of non-specific protein therapy and the scarlet fever immunity test. The new work on the parathyroid and ovarian hormones is set out, and the photo-synthesis of vitamin D, which was not achieved until after the book went to press, is anticipated. Some confusion is caused by the difference in terminology of the U.S. or the British Pharmacopœias. Thus liquor arsenicalis (B.P.) becomes liquor potassii arsenitis (U.S.X.), and we find two entirely distinct preparations known as liquor arsenicalis pearsonii and liquor arsenicalis clemens. It is surprising that the leech should be so curtly dismissed by authors who define the rational method of therapeutics as "The giving of the right drug to the right patient in the right dose, and the right way at the right time." The British reader will be irritated by some of the expressions used, such as "nerve booster," but will appreciate the value of the book as a whole. It is very well indexed, and our only criticism of the production concerns the poor quality of the paper used.

New Inventions.

ILLUMINATORS FOR OPERATIVE RADIUM WORK.

A CLEAR operative field being of considerable importance in those operations of access which have as their object the exposure of deep-seated tumours for the insertion of radium, demands in many cases special means of illumination. To facilitate this, a series of illuminators (see figure) has been designed.



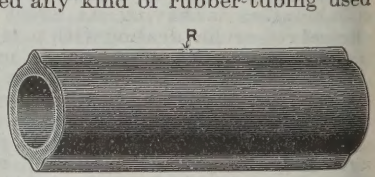
The construction of these permits of their attachment to speculæ, retractors, &c., used in the surgery of access, and to special vaginal speculæ used in the treatment of cancer of the cervix. Each carries a detachable lamp, while the current (4 volts) is conducted by means of a cord, detachable as shown.

The instruments are made by the Medical Supply Association, 167, Gray's Inn-road, London, W.C.

ARTHUR B. SMITH, M.B., F.R.C.S.Edin.
SYDNEY M. SMITH, M.B., Ch.B. Edin.
Harley-street, W.

A NEW DRAINAGE-TUBING.

THE modification of drainage-tubing here illustrated consists simply of a solid rib (R) of rubber on opposite sides of the tube, to enable a stitch to be passed through without puncturing the lumen. De Pezzer tubes, indeed any kind of rubber-tubing used for drainage, could be easily treated in the same way. When a tube draining a jejunostomy, a cæcostomy, or a urinary bladder is anchored by a stitch, there is often a little leakage through the puncture, which tends to grow larger by tension. The escape of even a small quantity of fluid from the small bowel, a septic gall-bladder, or a severely infected urinary bladder, often causes a troublesome dermatitis and infection of the rest of the wound. This modification to the tube is designed to obviate such troubles. The tubing may be obtained from Messrs. Chas. Thackray and Co., of Leeds.



Swindon. H. H. GREENWOOD, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, JUNE 23, 1928.

MEDICAL CARE OF SCHOOL-CHILDREN.

AMONG the real social advances of the present century in this country the concerted national effort for making a scientific study of children during the growing age is one of the most important. Although only the fringe of the net enveloping and hiding the factors of healthy growth has so far been touched, yet we already see, in the enhanced cleanliness, well-being, and physique of our children much encouragement for still further attempts to solve the difficulties inherent in the problems of life. But if no country in the world can show such an extensive and coördinated scheme of school medical service and of child welfare generally as exists with us, we must not forget that many gaps and anomalies are still apparent in that scheme, a position which was revealed in the recent debate in the House of Commons when the House went into Committee of Supply on a vote for £26,215,828 for salaries and expenses of the Board of Education. Mr. TREVELYAN, in moving to reduce the vote by £100, said that although the value of nursery schools so clearly shown in Sir GEORGE NEWMAN'S 1926 report was fully recognised by all, yet there were at present only 26 of these schools with a population of 1367 children out of 2,000,000 children between 3 and 6 years of age. Other speakers followed, pointing out that public opinion was now ripe to support the Board in giving a lead to local authorities for a favourable consideration of any proposals for the extension of these schools. In proof of the practical work done by the schools Viscountess ASTOR said that the average proportion of children entering them at 2 years of age, who were rickety, was from 80 per cent. to 90 per cent., but that within one year all cases of rickets were cured in the open-air régime of the nursery school. She added that the average proportion of the diseased and delicate entering elementary schools at the age of 5 years was from 30 per cent. to 40 per cent., while the average proportion of children who had attended a nursery school between 2 and 5 years of age was 7 per cent. The debate led to an expression of opinion from Lord EUSTACE PERCY, President of the Board, as to the relative merits, in dealing with malnutrition, of the giving of school meals only on medical certificate rather than merely giving a midday meal to all children whose parents were necessitous. His view was that malnutrition was a medical question and should be kept on that basis. The Duchess of ATHOLL, Parliamentary Secretary to the Board, defended the disallowance of the travelling expenses of school-children between the buildings and the playing-fields on what may be considered an exactly opposite view; for if the Board consider that money should be spent on general facilities which would provide opportunities for the children in schools rather than upon providing travelling expenses for individual children, the decision exactly cuts across the basic medical view that treatment—and athletics constitute treatment—should be directed to the places where it is required individually.

There is no longer dissociation between education and child hygiene; the balance between educational needs and the physiological demand for movement and play in children is being adjusted, and already in most places an organiser of physical training is working hand-in-hand with the school medical officer. The cost of apparatus for athletic and remedial exercises is already part of the educational outlay, but space for recreation is sadly lacking in most large towns, though such voluntary efforts as those of the Playing Fields Association are now producing good results. But the demand for playing grounds far exceeds the supply. It is, too, in just those areas where recreational facilities are most needed that they are lacking, and the children in such areas cannot afford the expense of travelling nor can this expense be incurred by the local authority. While the competitive spirit is necessary to stimulate interest and endeavour, it is not the outstanding performers who travel to the playing-fields; a whole class goes at a time, and those most competent to judge are unanimously of the belief that the mental, moral, and physical results more than justify the small expense of travelling. More playing-fields and more nursery schools are clearly needed. The activities of the nursery school are medical, social, and educational and aim to provide the right environment for the proper development of very young children. Sir GEORGE NEWMAN says: "The remarkable improvement in the health and nutrition of children attending nursery schools may be attributed to medical supervision, a suitable dietary, sufficient rest, and an open-air régime." For the most part children are selected for nursery schools either on social or medical grounds, so that the incidence of defects are heaviest on such children. Lady ASTOR'S figures of 80 per cent. to 90 per cent. of rickety children entering such schools appear to be high, and sufficient statistics are not yet available for proof of them; it is, however, true that rickets does disappear from the children attending those schools. Moreover, those children are of the age when many observers hold that infective conditions such as tuberculosis and rheumatism take root, and it might well be that the additional nurture provided can lessen or prevent much of the present incidence of these diseases. The nursery school age embraces those years of early character formation which may mould the ultimate personality for better or for worse; it also bridges the gap that now exists between the maternity and child welfare scheme and the school medical service—a gap the results of which has brought home the truth of the oft-repeated remark of Dr. C. J. THOMAS, senior medical officer of the London County Council, that "The school service is a receiver of damaged goods."

The difficulties in the way of establishing nursery schools are numerous and real. At present the public health authority is responsible for the maternity and child welfare scheme, and although coördination between the sanitary authority and the school medical service is in most places close many financial and administrative difficulties are ready to hand. Nursery schools are essentially expensive, partly because of the cost of premises and partly because of the necessary staffing, equipment, and management, including meals. Many mothers at present object to leaving their infants at a school all day. The question whether all the helpers should be certificated teachers is much debated, and yet there must be adequate guarantee of the status of people who train children. Few of these obstacles are insurmountable and coördination is becoming more real day by day. Already in many areas pre-school children are treated at the school clinics, for school experience has shown that the heaviest burden is the disease that springs from early childhood. The money spent in rectifying early evils will ultimately lessen the heavy costs for maintenance of hospitals, sanatoriums,

clinics, and other institutions for the treatment of disease. A simple beginning could be made by extending existing welfare centres, crêches, and day nurseries, and there are many highly competent women able and willing to superintend, direct, or assist in the management of such institutions, designed in the first instance to meet the needs of the physical and social welfare of the child. Children so prepared might then attend an elementary school at an earlier age than the usual school entrant age of 5 years. At the present time the giving of school meals is largely left to the discretion of local education authorities, and practice varies widely in different localities. The question of feeding necessitous children is one for the community as a whole to solve, but confusion is apt to arise, and often does arise, from the ambiguous use of what should be specific terms. Malnutrition is a pathological condition and may be the result of many physiological and pathological conditions besides insufficient or unsuitable diet. A necessitous child is not necessarily an ill-nourished child, just as a child suffering from malnutrition is not necessarily a necessitous child. The diagnosis of the cause and the treatment of malnutrition is essentially a medical question the elucidation of which calls for much skilled knowledge. Nothing but good can come from the focusing of public attention on the health of the children; it is of paramount importance in social and national life, and its preservation and improvement forms one of our greatest medical responsibilities.

THE PROBLEM OF THE PYLORUS.

ELSEWHERE in this issue we publish the third of the Croonian Lectures lately delivered before the Royal College of Physicians by Dr. CHARLES BOLTON. Those which have already appeared [1] contain a close analysis of the symptoms complained of by a group of 1000 persons seeking relief on account of pain coming on in relation to food, and it will have been noted that Dr. BOLTON recognises three syndromes, the pyloric, the cardiac, and the œsophageal, each of which he further subdivides. The third lecture is largely devoted to a detailed examination of the factors and mechanisms and effects of pyloric dysfunction. Of late years, physicians especially interested in gastric disease have more and more subscribed to the doctrine that spasm of the pylorus and the pyloric vestibule is the main factor in the production of delayed pain after meals, and Dr. BOLTON here sets out fully the facts on which this belief is based. The movements of the pylorus are governed by the myenteric plexus, and the sphincter undoubtedly reacts to solids and to strong acids in such a way that these cannot leave the stomach until reduced to a form more acceptable to the small intestine. Being controlled by a nerve-plexus the sphincter is further liable to reflex influences such as those from a diseased appendix or colon, whilst instability of the central nervous system will also tend to cause disorderly action in this region. Perhaps, however, the most interesting part of Dr. BOLTON'S lecture is the section where he discusses the influence of the pylorus as a regulator of the acidity of the gastric contents.

When investigating the case of Alexis St. Martin, BEAUMONT noted that bile was often to be found in the stomach, but it was not until BOLDYREFF demonstrated the presence of trypsin and the general regurgitation of duodenal contents in dogs that the importance of its presence was realised. BOLDYREFF was the first to point out that regurgitation from the duodenum to some extent neutralises the acidity of the gastric contents, so as to secure an optimal acidity for digestion in the stomach, and so as to protect the intestine against the effects of strong hydrochloric acid. When the fractional method of gastric analysis was introduced by REHFUSS, he and his co-workers confirmed the fact that trypsin is often present in the stomach, and BENNETT and RYLE, in the well-known work in which they established the types of acidity found in normal subjects, were at pains to explain the importance of this mechanism of regurgitation in the process by which the concentration of acid falls considerably during the later stages of digestion. In 1921 GOODHART and BOLTON, by an ingenious method of studying the various chloride constituents of the stomach contents, were able to demonstrate that, as the acid curve went up, the neutral chloride curve remained low, and that, as the percentage of acid fell, that of neutral chloride increased pari passu, the total chloride curve remaining unaffected. From these and other observations they concluded that the curve which really demonstrates the secretion of acid during the fractional test-meal is not the ordinary acid curve obtained by titration, but is rather the total chloride curve; the so-called acid curve really represents the progress of neutralisation. Their results have been confirmed by BAIRD, CAMPBELL, and HERN, as well as by ROBERTS and others, and in his present lecture Dr. BOLTON gives a full résumé of the evidence together with other data which go to support the hypothesis that regurgitation of the duodenal contents is a most important factor in the normal physiology of the stomach. Among the confirmatory evidence must be mentioned the work of R. W. A. SALMOND,[2] who by careful study of barium meals, has found that 93 per cent. of normal persons exhibit some degree of antiperistalsis of the duodenum. By this process the duodenal cap is often seen to be filled under pressure not only by the stomach but also by the duodenum, and when this happens at a time of pyloric relaxation, regurgitation into the stomach occurs. Dr. BOLTON believes that in the early stage of digestion the pylorus relaxes only before gastric peristaltic waves, and that as digestion proceeds and the acidity attains its normal height, the pylorus begins to relax independently of peristalsis; if the cap is filled at this time, the duodenal contents pass back into the stomach. In a later series of observations SALMOND has introduced a different type of regurgitation which occurs during both the passive and the active phase of the cap. While the cap remains distended, and between peristaltic waves, a trickle of barium may be seen to run back into the stomach, whilst at other times a contraction of the distal end of the cap causes the regurgitation. These radiographic findings are almost impossible to demonstrate except by direct observation, but it is to be hoped that X-ray cinematography will, in time, convince all who are interested.

While accepting duodenal regurgitation as probably the most important of all factors regulating the stomach's acidity, we must admit there are other possible factors. Thus PAVLOV regarded the gastric acid as being secreted at a constant level of concentration, the apparent variation being due to dilution of the early secretion of the body of the meal and partial neutralisation by the alkaline mucous secretion of the glands of the pyloric antrum; FOSTER and others have shown that in the presence of pepsin gastric mucus can neutralise a fairly large amount of

[1] THE LANCET, June 9th, p. 1159, and June 16th, p. 1211.

[2] Ibid., 1927, i., 1230.

acid. A third possible mechanism depends on the capacity of the gastric mucosa to secrete a diluting fluid. Thus ROTH and STRAUSS showed that the concentration of salt solution in considerable quantities could be reduced in 20 minutes from 2·8 to 1·7 per cent. They found that some new fluid must have been added because sulphate and phosphate were present in the gastric contents after the operation had taken place. BENNETT and CROHN have shown how strong solutions of glucose, of acid, or alkali are similarly diluted whilst lying in the stomach. It is too early to state which, if any, of these three factors is all-important, but BOLTON and his co-workers have certainly added very considerably to our knowledge by the confirmation of BOLDYREFF'S work, so ably summarised in the lecture we publish to-day.

THE TREATMENT OF ECLAMPSIA.

THE literature of eclampsia is an unwieldy collection of conflicting views. There are probably few diseases in which the observations of reputable workers have been so vehemently denied by other workers of equal standing. The reason for such acute dissension may be that, although convulsions associated with pregnancy are known by a common name, the pathological processes leading up to the fits are not the same in all cases. No satisfactory theory of their origin has yet been formulated and the ætiology of eclampsia remains obscure. The scheme of eliminative treatment devised by Dr. HASTINGS TWEEDY has been adopted as an empirical measure by many obstetricians who do not accept the theory of toxæmia on which it is founded; similarly, the removal of sources of irritation, and the exhibition of narcotics as practised by Prof. B. STROGANOFF, has been tried with good results, though the basis of this treatment remains hypothetical. Prof. STROGANOFF holds that eclampsia is of placental origin, being the product of two factors—the toxins circulating in the maternal blood, and the irritability of the pregnant woman's nervous system. The Dublin school believe that during the metabolic processes normal to pregnancy, toxins may accumulate owing to faults in management or deficient reserve power of the excretory organs. According to them, if toxæmia in the early stages is treated by starvation and laxatives, and the patient is encouraged to drink large quantities of water, eclampsia may be prevented. In the stage of convulsions their treatment consists of drastic purgation, lavage of the stomach and colon, and the promotion of diaphoresis and diuresis. The exact ritual of this school is familiar to readers of our series of articles on Modern Technique in Treatment.[1]

Prof. STROGANOFF, who is tireless in advocating the method which has been so successful in his hands, complained, in a communication submitted on June 15th to a meeting at the Royal Society of Medicine (see p. 1281), that its details are sometimes modified with unfortunate results. The main principles of his treatment are that the patient should be kept perfectly quiet in an isolated and darkened room; morphia should be given sparingly, choral hydrate in considerable quantities. All manipulations must be carried out under chloroform anæsthesia. Most careful attention to details is, however, essential if the best results are to be obtained. When the procedure advocated by him is minutely followed, and if the patient is not in labour, he claims that the fits generally cease and the pregnancy continues without reappearance of the symptoms. Prof. STROGANOFF does, however, allow certain modifications of the improved technique set out in THE LANCET in 1924 (vol. ii., p. 62). He approves of the substitution of luminal and hedonal for chloral hydrate in certain circumstances, their advantage being that they can be administered subcutaneously, whereas the only way in which chloral can be given to an unconscious patient is per rectum, when it may not be absorbed.

That conservative methods of treatment should be preferred to Cæsarean section or accouchement forcé was the definite conclusion reached by the sub-committee of the Section of Obstetrics and Gynæcology of the Royal Society of Medicine, appointed in 1921 to investigate the matter, and this conclusion was confirmed by reports from other societies received at the British Congress of Obstetrics and Gynæcology, held at Liverpool in 1922. But as between the techniques elaborated in Dublin or in Leningrad no pronouncement was made either by the committee or at the Congress. At the meeting of the British Medical Association held at Glasgow in 1923 the discussion favoured the Dublin procedure, but this was before the publication in this country of Prof. STROGANOFF'S improved prophylactic method. This has since been tried at Queen Mary's Hospital by Mr. L. C. RIVETT, who has treated 44 cases with only three deaths. In America, where conservative methods do not appear to have been generally accepted, JOHN WHITRIDGE WILLIAMS, at the Johns Hopkins Hospital, is said to have reduced his mortality from 22·8 to 13·3 per cent. by using this method, while Prof. STROGANOFF'S own recent figures are as low as 2·6 per cent. in 300 cases. It is to obstetricians working in this country, however, that practitioners will turn for more specific advice than they have hitherto received. The disease was never so common that the practitioner could hope to test for himself the different methods of treatment, and in recent years the increased number of women receiving antenatal care has further diminished its incidence. It is the more important that guidance should be available for the medical man who sees perhaps only one case in the course of five years. Assuming that conservative treatment is desirable should he adopt the Dublin method or that of Prof. STROGANOFF? The Section of Obstetrics and Gynæcology of the Royal Society of Medicine has recently drawn up a scheme under which reports from maternity hospitals will be issued on a definite pattern. Under this scheme the results at different hospitals should be easy to ascertain, and more valuable statistics, based on larger numbers, should be collected. The exact methods now used respectively by Dublin workers and by Prof. STROGANOFF could be tried on a considerable scale if all the maternity hospitals would coöperate to this end, and we suggest that a serious attempt should be made to decide which gives the better results under comparable conditions.

[1] THE LANCET, 1923, ii., 666.

LIVERPOOL AMBULANCE SERVICE.—The Voluntary Hospitals' Council of Liverpool is considering the best means of providing an ambulance service for transporting incapacitated patients from their homes to the hospitals. The work is at present performed by the police and privately owned ambulances, but it is felt that in the interests of the outlying districts a properly equipped service under the control of the Council has become necessary.

Annotations.

"Ne quid nimis."

POST-VACCINAL ENCEPHALITIS.

THE increase in cases of acute disease of the central nervous system during the last 25 years has been a notable feature of medical records. Epidemics of cerebro-spinal fever on the Continent, in the U.S.A., and in this country, were for the first time definitely recognised, though much earlier outbreaks are known to have occurred. The serious epidemics of polio-encephalomyelitis in Scandinavia in 1905, and in the U.S.A. in 1909, and the increased prevalence of this disease in Great Britain since 1910, brought into great prominence the problem of infective disease of the central nervous system due to an invisible virus. Though no visible causal microbe could be discovered, the transmission of the disease to monkeys has repeatedly been accomplished. The appearance in 1907–8 of von Economo's epidemic encephalitis added a still more intangible element to the problem. This disease is very variable clinically and is more inscrutable in its pathology, for it has proved far more difficult to transmit to animals. The experimental problem has been further complicated and the imagination stirred by the discovery of a form of acute encephalitis communicable to rabbits by means of a virus present in the vesicles of ordinary *herpes labialis*. The serious prevalence of these diseases, especially those due to filtrable viruses, has given rise to the suggestion that some new factor in modern life predisposes to, if it does not actually originate, these obscure nervous affections, and it has been argued that a widespread carrier state or constitutional susceptibility has conditioned the occurrence of an actual attack of one or other of them when some other exciting cause has lowered resistance or produced an initial lesion in the brain or spinal cord. To this confused state of pathology has entered a fresh factor—the recognition of cases of encephalomyelitis following vaccination, usually primary vaccination in adults or children after the first or second year of life. These cases, which are now well known, have been recorded in many countries and have been the subject of comment in THE LANCET.[1] The occurrence of encephalomyelitis of similar type has also been reported after measles and chicken-pox. The disease has not been certainly communicated to animals from these cases. Attention has been called by F. Redlich[2] and others to cases described as encephalomyelitis disseminata which occur independently of recognised acute infectious disease, and only last week Dr. Donald Hunter and Dr. Russell Brain referred in our correspondence columns (THE LANCET, June 16th, p. 1250) to six cases seen recently at the London Hospital which clinically came under the heading of acute disseminated encephalomyelitis, but were in no way connected with vaccination.

As Prof. J. C. G. Ledingham points out on p. 1301 of our present issue, there is no constant clinical picture in post-vaccinal nervous disturbance; at least six clinical types of nervous disease have been reported as following vaccination. Two main hypotheses have been put forward to account for the cause and nature of these cases. The first is that they are due to vaccinia virus acting alone directly on the nervous tissues; the second, which is perhaps more generally supported, is that they are due to some other latent virus, stirred into activity by the vaccinia. This activation might be attributed either to the generalisation of the vaccinia virus and the consequent onset of symptoms about the eighth to twelfth day, a time at which a general vaccinia eruption occasionally occurs, or to an anaphylactic phenomenon akin to the fever, joint-pains and rash of serum disease, following the injection of antitoxin. Two recent communications support this latter view. F. Paul[3] records four cases in adults of *encephalomyelitis disseminata* due, he believes, to the virus of poliomyelitis; from one of these two monkeys were infected experimentally. These cases, he states, exactly resembled in every way, clinical, pathological, and histological, a post-vaccinal case which he also examined. v. Mikulowski[4] related two cases, both in infants, of post-vaccinal nervous disease. One was in a child of 13 months, whose symptoms suggested encephalitis lethargica; the onset was on the eighth day after vaccination; recovery was not complete since paresis, convulsions, and athetosis persisted. In the other case, symptoms were noticed seven days after vaccination and lasted only 48 hours, but were severe and suggested encephalitis. v. Mikulowski maintains that the symptoms and pathology of cases of post-vaccinal encephalomyelitis are often identical with those of *encephalitis lethargica*. On the other hand, such experienced investigators as H. M. Turnbull, J. M. McIntosh,[5] and J. R. Perdrau[6] agree in believing the pathological histology of the post-vaccinal cases to be different from that of poliomyelitis and encephalitis lethargica, and describe a characteristic perivascular demyelination as distinctive. Perdrau, however, considers the characteristic histological features of "disseminated encephalomyelitis" to be the same whether the disease is a sequela of vaccinia or some other acute infection or occurs independently. The importance of these cases is obvious, and it is to be hoped that the request of the Ministry of Health, published in THE LANCET of April 24th, 1926, for the notification of nervous illness within four weeks of vaccination, will lead the way to early recognition and elucidation of these obscure conditions.

[1] THE LANCET, 1925, ii., 1239; 1926, ii., 509, 764; and 1927, i., 619. [2] Wien. klin. Woch., 1928, xli., 177.

PRESERVATIVES IN FOOD.

A SUPPLEMENT to the March number of the *Bulletin* of the Office International d'Hygiène Publique contains replies to a questionaire on the regulations in force in 18 countries, large and small, concerning the use of certain antiseptics in foods. Germany is the most important State unrepresented in the list. The answers suggest that there is a closer approximation in practice between different countries now than there was a few years ago. We find a fairly general prohibition of certain antiseptics and a limited use of certain other preservatives, often limited to certain specified foods; for the most part the same preservatives are allowed in the same foods. Almost everywhere there is total prohibition of formaldehyde, and its use is specifically forbidden in all foods in England and Wales, Australia, Bulgaria, Canada, the United States of America, France, New Zealand, Sweden, and Switzerland. In the reply of no country is it mentioned as being allowed. Fluoric acid and its derivatives are almost as widely banned. Boric acid and its compounds may not be used as food preservatives in England and Wales, Bulgaria, or the United States, but elsewhere their employment is permitted within specified limits—e.g., in butter, condensed milk, margarine, and cream. In Canada, for example, boric acid is permitted (1 in 400) in cream, and (1 in 200) in butter, while in France it is allowed up to 5 g. per kg. in butter and margarine. Salicylic acid and its salts are given a slightly more extended use than boric acid, although they are entirely forbidden in England and Wales, Bulgaria, the United States, and France. In many other countries they are allowed in certain foods in restricted amounts. In Canada the limit is 1 part in 5000, while there seems to be no restriction as to any particular foods; in New Zealand they are allowed in sauces, fruit juice, and non-alcoholic drinks. Benzoic acid and sulphurous acid are the preservatives most widely sanctioned.

[3] Paul, F.: Med. Klinik, 1928, xxiv., 732 and 773.
[4] Mikulowski, V.: Schweiz. med. Woch., 1928, No. 20, 506.
[5] See THE LANCET, May 26th, 1928, p. 1094.
[6] THE LANCET, June 9th, 1928, p. 1201.

In England and Wales they are the sole preservatives whose use is authorised, but they may be added only to certain forms of food and only up to definite limits. The practice seems to be similar in most other countries except France, where benzoic acid and benzoates are not allowed at all. The regulations about colouring matter are even more complicated and varied and show marked differences. It is, however, generally recognised that every State must regulate the use of antiseptics and colouring matter in foods, that some of these additions are entirely undesirable and unnecessary, that certain foods do require, if they are to be kept, small quantities of preservatives, and that except for special foods like butter and cream the least objectionable antiseptics are benzoic and sulphurous acids.

BIOCHEMISTRY AND MEDICINE.

THE completion of the Courtauld Biochemical Institute at the Middlesex Hospital, which was described in our columns last week, symbolises the profound change which has come over medicine in the course of this century. As Sir Archibald Garrod pointed out when opening the Institute, the science of biochemistry was represented in medicine 50 years ago by a rack of test-tubes and a few bottles in the doctor's surgery. To-day a chain of laboratories is ready to assist the practitioner in diagnosis, treatment, and even in prognosis. His patients have the benefit of a wealth of scientific technique undreamt of by the last generation, and the family doctor fights disease not as an individual but as a member of an army with a vast organisation at his back. The science of biochemistry is comparatively new. A couple of decades ago its very name was unfamiliar, though the activities of the pathologist were already known to be expanding in chemical as well as in bacteriological directions. Now the field of biochemistry as applied to medicine is so vast that there are few diseases or disorders of function whose elucidation owes nothing to biochemical methods; moreover, some of our most effective remedies have been discovered, tested and standardised by laboratory workers. The new science plays an important part in preventive medicine, for it has evolved a multitude of tests by which the efficiency of the various bodily functions and the integrity of the various organs may be estimated, and from the results of which an accurate index of a normal man's health can be obtained. Its potentialities in this direction will be of progressive interest to actuaries. In forensic medicine the assistance of biochemistry has already proved invaluable. As to clinical medicine, the outlook in such serious diseases as cretinism and diabetes has been completely altered. With the isolation of the active principles of the ductless glands, their standardisation, and their synthetic preparation, an entirely new chapter of controlled therapeutics has been opened. On the diagnostic side the estimation of the functional activity of the stomach, kidney, and liver are of increasing importance; while changes in the chemistry of the blood and cerebrospinal fluid are being gradually but surely correlated with clinical syndromes. The colloidal chemistry of the body proteins is still in its infancy, but already light has been thrown on metabolic processes and great advances may be expected in the future.

But the hopes aroused by the development of a new science ancillary to medicine may be disappointed in two ways. The specialists who devote their life so its pursuit may lose sight of the clinical application of their knowledge, and become engrossed in theoretical studies; on the other hand, clinicians who have received less help than they anticipated from the laboratory in diagnosis and treatment may be reluctant to give adequate trial to new and complicated tests which make no claim to do more than confirm or throw doubt on clinical findings. When, however, an institute of biochemistry is situated not in academic isolation but actually in the same building as a large hospital, there must be such intimate association between laboratory and clinical workers as will ensure a constant interchange of ideas and problems. Prof. E. C. Dodds has already shown how keen and how stable is his interest in clinical problems, and workers under his direction will not fail to keep in touch with the needs of the patient. We congratulate the Middlesex Hospital on its good fortune in possessing a biochemical staff whose direct contributions to medicine are so impressive that Mr. S. A. Courtauld has already added to his munificent gift the sum of £20,000 towards the maintenance of the Institute.

OPERATIVE TREATMENT OF UTERINE CANCER.

THE chief gynæcological subject chosen for discussion at the meeting of the Nordisk Kirurgisk Forening in Gotteborg last summer was the comparative value of radiotherapy and operation in the treatment of cancer of the uterus. Dr. G. Schaanning, who dealt with the surgical aspect of the problem, has published a summary of his paper in the *Tidsskrift for Den Norske Laegeforening* for June 1st, 1928. As a former assistant of Prof. K. Brandt, he has been able to use the material of the University Gynæcological Hospital in Oslo. The period covered is from 1906 to 1925, and the number of cases of cancer of the uterus treated during this period was 562, of which 508 were cancer of the cervix, while the remaining 54 were cancer of the body of the uterus. Thanks to the comparatively stationary and controllable character of the population, Dr. Schaanning was able to trace as many as 537 of the patients. Of the 508 patients suffering from cancer of the cervix, 287 underwent some sort of operation, and 226 had a radical operation. The operative mortality of the radical operations was 10·6 per cent., but varied greatly, as might be expected, with the extent of the disease, being as low as 7·3 per cent. in early cases, and as high as 15·7 per cent. in advanced cases. What was, however, more striking and instructive was the reduction in the operative mortality during the period under review, although no fundamental change was made in the indications for operation during this period. Thus, in the five-year period, 1906–10, the operative mortality was 21·4 per cent., whereas during the period 1916–25, it was only 5·6 per cent. It is a pity that information is not forthcoming in this paper to explain such a remarkable improvement. The ultimate results were judged by the proportion of survivals without recurrence of the disease after an interval of at least five years, and it seems that only 26·7 per cent. of all the women who underwent a radical operation for cancer of the cervix could pass this test. Even when only those cases were considered in which there was no infiltration of the glands at the time of operation, the proportion of patients living without a recurrence of the disease five years or more after the operation was only 33·8 per cent. These figures give force to Dr. Schaanning's plea for an educational campaign to increase the possibilities of an early diagnosis. Such a continuous campaign is, in his opinion, the measure which is most likely to improve the prognosis. It will be interesting to note to what extent this opinion is endorsed at the forthcoming international conference on cancer.

STREPTOCOCCUS CARDIO-ARTHRITIDIS.

THE elective localisation of certain bacteria is well established; no one doubts that the bacillus of typhoid fever, however administered, is eventually localised in the small intestine. The work of Rosenow, particularly on the streptococci, certainly points to an elective localisation of these organisms. For example, 50 per cent. of the animals inoculated with a streptococcus from a cardiac valve acquired lesions in the cardiac valves; a strain from a case of chronic arthritis gave 66 per cent. lesions in the joints.[1] It

[1] Newer Knowledge of Bacteriology and Immunology. Jordan and Falk, 1928, p. 576.

is only a step from this to the theory of specificity among the streptococci, and in rheumatism we are familiar with the organisms of Beattie, Poynton and Payne, and Birkhaug. All observers agree, however, that most cases of rheumatism do not yield organisms either from the blood or in local lesions, and none of these has yet been recognised as the specific cause. The latest claimant is the "Streptococcus cardio-arthritidis" of J. C. Small, which has lately attracted some attention. Its claims, as now set out,[2] are difficult to appraise. Only three of Small's strains come from the blood; most of them are from the throat, where streptococci abound; and no evidence of any normal controls is given. Though the organism is said to be non-hæmolytic, to vary in its sugar reactions, and to be specific in its agglutinations, no cultural characteristics are adduced which would make it possible to recognise the strains. Many of the references are "in the press," others are "personal communications," and on the whole, technical details are inadequately presented. It may be noted that tests of cutaneous sensitiveness are on the whole negative, which is remarkable, since other workers have recently claimed specific results with their strains and, in fact, a surprisingly large number of rheumatic patients are Dick-positive. The author's parsimony in bacteriological information, however, is balanced by his generosity in clinical detail. Patients are treated by vaccines, by "soluble antigen," made by washing the streptococcus, and by antisera, and especially by concentrated globulin precipitates. Striking results are claimed; very exact and ample clinical details are quoted. Opsonic indices and agglutination titres show a speedy upward change; chorea disappears; valvular lesions are ameliorated. In considering these reports it should be remembered that a relatively new claim to the identification of the causal organism of rheumatic fever lends itself to criticism. Many independent investigators have incriminated the streptococcus, whereas few have produced evidence to show that other organisms might be to blame; but even if its guilt be proved the question would remain, whether one strain of streptococcus is specific for the disease or whether a variety of strains may cause it. The trend of opinion all over the world appears to favour a fresh trial of streptococcal antisera for many diseases whose ætiology is not as yet completely understood.

INDUSTRIAL ACTIVITY AND FATIGUE.

THE history of human endeavour in the past, whether in the construction of pyramids, cathedrals, industrial works, or engineering plants, has too often been a tale of effort forcefully directed by task-masters with but little care for the well-being of the labourer so long as the task progressed. Not until the beginning of this century did it begin to dawn upon employers, as a class, that maximum production is contingent on the fitness of the worker. In the eighth annual report[3] of the Industrial Fatigue Board an account is given of the way in which the work of the Board started and has since progressed, and of the gradual expansion of its activities. The problems recently submitted to the Board for solution cover a wide field and are of considerable importance. They include hours of work in relation to the value of rest pauses during long spells, and to the double-shift system for women; the physiology of ventilation with special regard to heating by the panel system; vision and lighting; accident causation; vocational guidance, and other matters. Government departments and industrial associations have sought information as to mining conditions, telegraphists' cramp, weight-carrying, and sickness in the cotton industry and printing trade. A further line of activity has been concerned with research into the principles governing muscular activity, muscular effort, and the effects of noise and vibration. Laboratory research often helps to disentangle the host of interfering factors which confuse the issue in industrial practice. Evidence, at first inconclusive, has been reinforced from different sources—for example, the increase in rate of output on short shifts, the beneficial influence of short rest pauses, the importance of high illumination in fine processes, the deleterious effects of high temperatures on work involving muscular effort, are among the conclusions which were tentatively made at first and as the result of many investigations, gradually came to be accepted. The Board is steadily gathering and propagating new knowledge, and even more important, is showing that improved conditions of work are beneficial alike to employers and workers.

[2] Amer. Jour. Med. Sci., 1928, clxxv., 638.
[3] Eighth Annual Report of the Industrial Fatigue Research Board, to Dec. 31st, 1927. H.M.S.O., 1928.

STEEL DENTURES.

DURING the late war the shortage of rubber and precious metals in Germany affected, among others, the dental profession, since the construction of dentures involves either a vulcanised rubber or a gold base. As a substitute for these materials the firm of Krupp began to experiment with stainless steel as a denture base. The method soon passed beyond the experimental stage, and before the end of the war dentures of stainless steel were being made on a considerable scale. Even now that both rubber and gold are freely procurable, steel is still being used in Germany to some extent, apparently with satisfactory results. In England experiments have been chiefly directed towards finding a synthetic resin which could be coloured to resemble gum more closely than is possible with vulcanite, and these attempts have been so far successful that it is hoped that vulcanite may soon become obsolete. The German investigations have, however, stimulated some preliminary trials of steel in this country, and Mr. A. C. Hutchinson, in the *British Dental Journal* for May 15th, records some experiments carried out in the Manchester Dental Hospital with the coöperation of Messrs. Firth and Sons, of Sheffield. It appears that Krupp's use for dentures a rust-proof steel belonging to what is termed the VA group, which has a high resistance to corrosion even when soft. It contains 20 per cent. of chromium and a medium content of nickel. A denture made of this material is only half the weight of a gold plate of the same thickness, and in order to ensure equal strength the gold denture would have to be twice as thick, and would weigh four times as much. Mr. Hutchinson experimented with Firth's Staybrite silver steel and found it possible to hammer and swage the material into dental plates. Soldering, on the other hand, presented great difficulties and, so far, the search for a suitable flux has not been wholly successful; but it was found possible to attach teeth to a steel plate by means of vulcanite, and the attachment appeared perfect. The work is still in the experimental stage in this country, and the production of dentures which are satisfactory in the mouth is still some way off, though there seems to be no reason why the German results should not be repeated here. We understand that in Germany the process is complex, involving a technique not possible in a dental workshop, and that the actual swaging of the steel is carried out by Krupp's to models supplied by dentists. Nevertheless the method has distinct possibilities and we hope that Mr. Hutchinson will continue so promising an experiment.

SPASM OF THE PYLORUS IN INFANTS.

ONE effect of the introduction of Rammstedt's operation for hypertrophic stenosis of the pylorus in infants has been that a distinction is drawn between cases in which there is a palpable pyloric tumour and those in which there is not. With an experienced and careful observer it is safe to say that if a tumour cannot be felt after several examinations, and visible gastric peristalsis is well marked, the case is probably one of pyloric spasm, for which operation is contra-

indicated. The distinction between the two types of cases has led to a closer study of the ætiology of these conditions, and Dr. M. I. Rubin [1] now calls attention to the presence of an enlarged thymus in cases of pylorospasm. He has observed that in suspected pyloric stenosis the vomiting often stops after an examination with X rays. He has also found that in these cases there is commonly a history of attacks of breath-holding and cyanosis which point to the possibility of thymic enlargement. Radiograms were taken with this in view and in 13 unselected consecutive cases an enlarged thymus was seen, whereas the gland was enlarged in only one of seven cases of true pyloric stenosis. More than half of the cases of pylorospasm had symptoms suggestive of thymic enlargement, and the five which were treated only by exposure of the thymic region to X rays all showed improvement. Other observers have called attention to the possible association of enlargement of the thymus with pyloric spasm, and treatment by means of X rays or radium has also been previously reported. At the same time, as Dr. Rubin points out, it is still doubtful whether the respiratory embarrassment in these cases is really referable to an enlarged thymus, and the value of radiological examinations, more especially when negative, is not fully established. In one series of 60 infants with varying complaints X rays showed enlargement of the thymus in 29, which suggests that deductions about the connexion between thymic enlargement and pylorospasm are of uncertain value if based solely on radiological examination. A larger series of infants with pylorospasm will have to be examined and treated by X rays before such a connexion is placed beyond doubt.

THE WORK OF A POOR-LAW HOSPITAL.

Dr. A. Lionel Baly, the medical officer of the Lambeth Poor-Law Hospital, has combined with his report for last year a retrospect of the work of the institution during his 20 years' service. It is an outspoken and challenging document which not only records the progress of the last two decades but indicts boards of guardians generally for having "completely failed to appreciate their responsibilities" under the existing law, with the result that "the poor-law hospital has not been provided with adequate facilities for the treatment of patients." Had they risen to their responsibilities Dr. Baly believes that there would have been no waiting lists at the voluntary hospitals, since destitute patients would have been taken off those lists, and that consequently the question of poor-law reform would not have arisen. Even now he is satisfied that the adoption of enlarged facilities would be infinitely less costly than any of the suggested reforms. But, apart from the slow growth of the ideal that a "workhouse infirmary" should afford its patients the best that science can give, boards of guardians generally would probably reply that they have been compelled to keep the fear of the ratepayers before their eyes. In any case the opportunity—if, in the comparatively recent state of public opinion, it was an opportunity—has been lost, and poor-law reform in a more or less drastic shape is now bound to come.

That the poor-law hospitals have grown enormously in importance and efficiency of late years is well known, and the figures which Dr. Baly gives of his own experience are convincing, since it is certain that many similar institutions could, mutatis mutandis, show parallel results. Between 1912 and 1927 the number of patients dealt with at the Lambeth Hospital has increased by 80 per cent., the accidents and injuries treated by 390 per cent., and the number of operations by 592 per cent. Serious cases, as of fracture and concussion, have risen enormously, yet it is significant of the efficiency of modern methods of surgery that the deaths have increased by only 37 per cent. With the exception of the dental department practically all the new departments have been added since 1912. All this leads Dr. Baly to point out not only that the work of a first-rate poor-law institution is now that of a large general hospital, but that the poor-law institutions are the only "general" hospitals into which all classes of cases, with the exception of a few specified fevers, have to be admitted. This being so, it is obvious that for the proper classification and separation of the more serious cases from the general wards a poor-law hospital ought to be as well equipped as a voluntary one, if not better. The present mixtures of serious or dying cases with convalescent patients will, all will allow, be looked upon in the future as incredible. Dr. Baly calculates that the amount of scientific work now being done by the London poor-law hospitals is approaching that of the voluntary institutions, and that they will in time be forced to undertake a far greater proportion of it unless the hospitals outside the poor-law are enabled to increase their resources enormously.

On the difficult matter of the certification of mental cases Dr. Baly has some interesting things to say. Since he has at his disposal no suitable accommodation for mental cases he has to certify all of them, notwithstanding the almost daily pleas of the relatives of these unfortunate patients that they should be allowed to remain where they are instead of being removed elsewhere as "insane." He is fully convinced that with proper accommodation he could keep at least 25 per cent. of these patients in general wards without certification. It is fully open to boards of guardians to provide this accommodation, though it means that in London the cost would be transferred from the County Council to the union. An alteration of the law would, however, be necessary for the retention, which Dr. Baly strongly advocates, of recoverable certified cases within the walls of poor-law hospitals. This is a direction in which elasticity is needed alike for scientific reasons and as a concession to the entirely comprehensive human repugnance to the indiscriminate use of the word "insane."

THE BUNDABERG DISASTER.

IT will be recalled that a Commission was appointed to inquire into the deaths which in January followed the injection of diphtheria prophylactic into a number of children at Bundaberg, in Queensland, Australia.[1] The Canberra correspondent of the *Times* last week telegraphed particulars of the Commission's report, now tabled by Sir Neville Howse, the Federal Minister of Health. The evidence given before the Commission subsequent to our comment on Feb. 4th suggested bacteriological contamination as the cause of the accident. The prophylactic toxin-antitoxin mixture used contained an amount of nutrient broth which would, in the absence of an antiseptic, act as a good medium for the growth of any organisms fortuitously introduced. The doctor who made the injections testified that the prophylactic was observed to be cloudy on inspection the day after the injections, when the first children died. Curiously enough, the prophylactic contained no antiseptic, a point which the Commission adversely criticises, remarking that such products, unless containing sufficient antiseptic, should not be issued in rubber-capped containers for repeated use. So far as we are aware, all prophylactics and vaccines issued in rubber-capped bottles in England, America, and Germany contain from 0·3 per cent. to 0·5 per cent. of phenol, tricresol, or lysol, an amount sufficient to inhibit the growth of practically all pathogenic organisms. Though rubber-capped bottles have been much used as containers, most heads of laboratories issuing sera and vaccines dislike them. When fluid is withdrawn through a syringe needle which has been plunged through the cap, a partial pressure is produced inside and at the first opportunity air with any contamination on the cap is sucked in. Though it is possible for a trained bacteriologist repeatedly to pierce the cap of a rubber-capped bottle containing only sterile nutrient broth, without causing contamination, the risk in practice is

[1] Jour. Amer. Med. Assoc., May 26th, p. 1694.

[1] See THE LANCET, Feb. 4th, p. 249.

a real one, and there is evidence that bottles in the past have been contaminated in this way even when containing a reasonable amount of antiseptic. For sterilising the cap before puncture pure lysol or tincture of iodine is usually employed. The Commission concludes that staphylococci had been introduced by the needle through the rubber cap when the bottle was in use some days before the fatal day late in January, and that these organisms caused the deaths. These conclusions are said to rest partly on negative evidence. From the evidence given before the Commission and reported in the Australian press we know that the first symptoms of illness in the children who had been injected were vomiting, diarrhœa, and fever, coming on within eight hours. There is no mention of any organism of the food poisoning group. The symptoms described are not those usually caused by streptococci or other dangerous microbes which might suggest themselves, nor are they the commonly accepted symptoms of illness caused by staphylococci, though we must admit that we do not know much of what would happen after the injection subcutaneously or intramuscularly of the enormous numbers of cocci that might be contained in a fluid recognisable as "cloudy." The Commission apparently recommended consideration of the use of detoxicated toxin—i.e., toxoid or "anatoxine." (The cable, presumably in error, reads "antitoxin.") We have previously noted [1] that the prophylactic mixture mostly used in England contains toxoid and no untreated toxin. Toxoid alone is being used tentatively in England and by Park and others in U.S.A., and is widely employed in French-speaking parts of Europe.

The whole incident reaffirms that the price of safety in these matters is eternal vigilance, but it does not indicate any loophole in the regulations or prevalent practice in English-speaking countries, with which we are most concerned.

CONGENITAL ANEURYSM OF THE CEREBRAL ARTERIES.

SPONTANEOUS subarachnoid hæmorrhage of non-traumatic origin, of which Dr. Bruce Maclean reports a case in our present issue, has proved of great interest both to clinician and pathologist since 1859, when Sir Samuel Wilks published a paper entitled Sanguineous Meningeal Effusion (Apoplexy): Spontaneous and from Injury. As the result of his work rupture of saccular aneurysms upon branches of the circle of Willis slowly came to be recognised. H. Eppinger, in 1887, was the first to postulate a congenital basis for these aneurysms, and he demonstrated localised defects in the elastic and muscular elements of the vessel wall. He pointed out that they almost always occur at the bifurcation or branching-point of vessels and generally in the fork between the parent trunk and the origin of a branch. In this country H. M. Turnbull (1914) and E. G. Fearnsides (1916) have fully confirmed what Eppinger said. Turnbull describes the lesion as "an inherent weakness due to a congenital abnormality in the structure of the arteries at their points of junction." They established the observation, since confirmed by others, that such aneurysms may be met with at all ages from early infancy upwards and may in fact rupture at any age.

Recently the co-existence of co-arctation of the aorta and ruptured cerebral aneurysm has been recorded by several independent observers—H. L. Parker (1926), F. Parkes Weber (1927), H. W. Woltman and W. D. Shelden (1927), and F. H. K. Green.[1] This last author points out that these observations support the hypothesis of Eppinger, for "where one congenital abnormality exists it is by no means uncommon to find others." He adds that "against this may be objected the fact that in patients with aortic co-arctation it is common to find an abnormally high blood pressure in the vessels to the head, neck, and upper extremities, and this in itself might be adduced to account for the formation of aneurysms in the brain."

It is important to remember that a large proportion of all cerebral aneurysms produce no symptoms during life. A considerable number press upon or rupture into the brain, giving rise to symptoms and signs which are indistinguishable from cerebral tumour or from cerebral hæmorrhage. There is, however, one clinical picture which we owe principally to C. P. Symonds (1923), in which the aneurysm ruptures minutely and leaks slowly into the subarachnoid space. The leakage may be so gradual as to cause little or no cerebral compression, so that consciousness may not be lost. Signs of acute meningeal irritation appear—headache, pain or stiffness in the neck and limbs, a positive Kernig sign, and a dazed, irritable mental condition. The occurrence of "hæmatolytic" fever in the first ten days may give rise to suspicion of an infective meningitis, but lumbar puncture reveals a cerebro-spinal fluid which is highly characteristic (Froin, 1904). There is: (1) An even admixture of blood which is the same in a series of specimens collected at the same puncture; (2) absence of coagulum; and (3) pink, brown, or yellow colouration of the clear supernatant fluid, which is apparent when the red cells have been allowed to sink to the bottom of the tube.

The occasional occurrence of subretinal and vitreous hæmorrhages is another phenomenon of great importance. The earliest case recorded is that of Sir William Hale-White (1895). C. P. Symonds (1923), L. Paton (1924) and G. Riddoch, C. B. Goulden, and H. M. Turnbull (1924) have since discussed their ætiology and significance. The hæmorrhages result from venous obstruction due to distension with blood of the subarachnoid sheath of the optic nerve. As might be expected, they are particularly found in those cases where the ruptured aneurysm is of the anterior cerebral, anterior communicating, or internal carotid arteries. The question whether the subarachnoid hæmorrhage itself ever penetrates the lamina cribrosa still gives rise to dispute.

[1] Green, F. H. K.: Quart. Jour. Med., 1927–28, xxi., 419.

SUBSCRIBERS to the Dawson Williams Memorial are invited to attend a meeting to be held at the House of the Royal Society of Medicine, 1, Wimpole-street, W., on Tuesday, July 10th, at 5.30 P.M., to receive the treasurer's report and decide on the form of the memorial. The organising committee suggests that it should be a prize, to be awarded every two or more years, for the best work which has been done in pædiatrics since the previous award. The list of subscribers will remain open until July 10th, and contributors are invited to send their cheques to the hon. treasurer, Sir StClair Thomson, at 64, Wimpole-street, W. 1, before that date, as the list must be then finally closed.

THE eighteenth annual meeting of the Oxford Ophthalmological Congress will be held from Thursday, July 5th, to Saturday, the 7th, under the mastership of Mr. Philip Adams. The Doyne Memorial Lecture will this year be delivered by Dr. Arthur Thomson, the Dr. Lees professor of human anatomy in the University of Oxford, whose subject will be Observations on the Eyes of Birds. The full programme of the congress may be had from the hon. treasurer, Mr. Bernard Cridland, Salisbury House, Wolverhampton. An exhibition of ophthalmological instruments and apparatus will be on view during the meeting.

WE regret to record the death on June 16th of Lord Hambleden, chairman of King's College Hospital, to whose generosity this hospital owes not only its present site but many other benefactions. Lord Hambleden was a firm friend to the voluntary hospitals and a powerful worker in their interests. The institution of the Hospital Saving Association, over which he presided, and recently the development of the principle of admitting paying patients to private wards, owe much to his initiative, and his wise counsel will be greatly missed by those concerned with the welfare of the sick.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXXXI.—THE TREATMENT OF TIC
(HABIT SPASM).

A TIC may be defined as "a coördinated purposive act, provoked in the first instance by some external cause or by an idea" and perpetuated as a repetitive involuntary movement. The same term has recently also been applied to certain coördinated involuntary movements which are found in persons suffering from organic diseases of the nervous system—for example, epidemic encephalitis. In spite of superficial similarities these two forms of involuntary movement are ætiologically as distinct as the hemiplegia produced by hysteria and that resulting from cerebral hæmorrhage, and the word tic is employed in this article in its older and established usage of a derangement of neural function occurring in the absence of organic nervous disease. Involuntary movements of organic origin which may be confused with tic include some of the very varied disorders of motility which may follow epidemic encephalitis, especially the so-called postencephalitic "tics," myoclonic movements, conjugate ocular spasms, and the slow rhythmical movements known as bradykinesias. Other conditions which must be considered in making the diagnosis include muscular spasm due to focal epilepsy, and extrapyramidal syndromes such as chorea, athetosis, and torsion spasm.

Ætiology.

Experience has shown the following working hypothesis to be of practical value in treatment:—

There is much to be said for regarding a tic as a conditioned reflex—that is, as a motor response which through a process of association has come to be linked with an inappropriate stimulus. At first the movement which later becomes a tic is purposive, being still the response to an appropriate stimulus. For example, a child blinks because it has conjunctivitis or twists its head because its collar is tight. Why does the movement continue after the stimulus has ceased to exist? The explanation is that the movement has now become the motor response to a new stimulus which has become capable of evoking it through association with the original one and which continues to be operative though the latter has come to an end. This association is a mental process which relates the movement to new elements in the patient's environment. For example, a child's innocent and physiologically justifiable sniff or wriggle may evoke admonitions or punishment from its father or the irritated protest of its mother that "it gets on her nerves." The movement may thus become associated in the child with mixed feelings of fear, resentment, and a sense of its power to exasperate, all of which are directed towards the parent. The parent's reproof and the child's emotional reaction to it become linked with the original stimulus and acquire the power to elicit the same response. Thus the parental eye becomes a conditioned stimulus which now by itself is capable of evoking the movement. Later the movement may be called forth by any circumstances which produce in the child the corresponding state of mind, especially by anyone who stands to the child in a relationship somewhat similar to that of the parent—for example, the school-teacher. Suggestion also plays an important rôle in strengthening and establishing the pathological reaction, often operating in the well-meaning comments of relations or neighbours that "the poor child can't help it." Once established, the tic tends to strengthen in the patient, who is powerless to control it, those very feelings of inadequacy or self-pity which are usually associated with its provocation, and so to set up a vicious circle.

One more ætiological factor remains to be mentioned. The tic as a link in a causal chain is related not only to the past but to the future, and has reactions which reverberate indefinitely between the patient and his environment. He is apt to exploit his disorder as a defence against the very circumstances which elicited it, using it perhaps as a scourge to a repressive parent, a claim upon the pity of friends or a refuge from social obligations.

Psychotherapy.

The foregoing considerations lead us to the conclusion that no treatment of tic is likely to be successful which is not primarily psychotherapeutic. A lengthy analytic investigation designed to expose the patient's faulty emotional adjustments and to re-educate him is at present limited to the few, but fortunately much can be done without prolonged investigation, especially in early cases, by those conversant with the principles involved. Such short cuts may be theoretically unjustifiable but they have the double pragmatic sanction of necessity and success. The practitioner should recognise that the movements are a symptom of a faulty mental adjustment, and should endeavour to find an answer to the following three questions: (1) What is the stimulus—i.e., the factor in the patient's environment, which evokes the movement? (2) What is the emotional state with which it is associated? (3) What psychological end does the disability serve? Inquiry along these lines, if conducted with sympathy and tact, may lay bare feelings of inadequacy, embarrassment or shame which go the root of the symptom and indicate the lines along which the readjustment of the individual must take place.

Conscious Re-education.

Conscious re-education consists of the practice by the patient of exercises involving: (1) muscular relaxation and immobility, and (2) orderly movement of the affected parts of the musculature. The physiological basis of this mode of treatment probably consists in the fact that both voluntary relaxation and orderly movement of affected muscles involve at the level of the cerebral cortex inhibition of the pathological conditioned reflex which constitutes the tic.

1. For the practice of muscular relaxation the patient should be placed in the position in which the tic is least troublesome, which will usually be lying down. He is first instructed to practise a general relaxation of all his muscles, and later his attention is directed to the affected part of the body and he practises immobility of the affected muscles for periods of gradually increasing length.

2. He next practises exercises which involve orderly movement of the affected part, and which can easily be devised to meet the requirements of each case. Thus a patient suffering from a blinking tic is made to open and close the eyes slowly to order. Tics involving the lower part of the face are treated by opening and closing the mouth, protruding and withdrawing the tongue, retracting and pursing the lips, &c. Spasmodic torticollis requires movements of rotation and flexion of the neck. These re-educative exercises are first carried out under the supervision of the physician and the patient is then instructed to practise them alone several times a day in front of a mirror. A child naturally requires adult supervision for this purpose. Reading aloud is a useful exercise for patients with any form of facial tic, also Swedish remedial exercises. No exercises should be carried to the point of fatigue.

Hypnotic Suggestion and Re-education.

The usefulness of suggestion in treatment is limited by the fact that it does little to correct the patient's mental maladjustment. When used alone, therefore, suggestion is unlikely to produce a permanent cure, at least in adults, though it may afford striking temporary relief. The most effective way of employing it is in the hypnotic state. The patient is hypnotised and often, until the process becomes familiar to him, he exhibits an intensification of his involuntary movements during the early stages. The first suggestion given is of complete muscular relaxation and cessation of the movements. As soon as this is achieved the patient's attention is directed to the fact that he has succeeded in controlling the tic. At the first two or three treatments it is wise to be content with reaching this point and concluding with general suggestions of recovery. The next step is to begin hypnotic re-education, which consists in causing the hypnotised patient to carry out the re-educative exercises which have been described in the previous section, at the same time emphasising to him his capacity to do this successfully. By means of hypnotic suggestion the process of re-education may be shortened and the rapid improve-

ment of which the patient is conscious during his waking life is of considerable psychological value.

Direct suggestions of improvement made to the fully conscious patient are of less therapeutic value except perhaps in children, but indirectly suggestion assists the curative powers of other measures.

Surgical Treatment.

Apart from theoretical objections to the surgical treatment of tic there are few tics in the treatment of which surgical measures are practicable, and spasmodic torticollis is now almost the only one which brings the patient into the surgeon's hands. Surgery can at best be only palliative and cannot hope to achieve a radical cure; moreover, since tic is a disorder of movement and not of individual muscles, it is insufficient to put out of action only the muscles which have hitherto been involved. As J. M. T. Finney and W. Hughson say, "not infrequently, when one muscle or group of muscles—those primarily involved—are put out of commission by the operation, the affection immediately manifests itself in an adjacent set of muscles or may even involve the opposite side." However, if the operation carried out is sufficiently extensive to immobilise the affected part the suggestion of cure may be so strong that the movements do not recur when function returns.

Many surgical measures have been employed in spasmodic torticollis since Minnius, in 1641, first treated the condition by open section of the sterno-mastoid. The greatest prospect of success would appear to be offered by the operation practised by Finney and Hughson which involves bilateral resection of the spinal accessory, suboccipital, great occipital, and third cervical nerves, and which they claim yielded complete cure in 12 and improvement in a further 16 out of 32 patients operated upon. Operations for the relief of facial tic cannot be recommended.

Other Therapeutic Measures.

All available means should be employed to maintain the general health at a high level, since tics are always more troublesome when the patient is fatigued or "run down." Sedative drugs are useful adjuvants to other modes of treatment. The bromides are of help both in children and adults, and possess the physiological justification that Pavlov has shown that they strengthen the inhibitory processes of the cerebral cortex. Adequate sleep must be ensured to the patient, if necessary by the exhibition of soporific drugs. Bromides are usually sufficient for this purpose in childhood, but adults may require medinal grs. 7½, or luminal gr. 1 at bedtime. Nothing is to be expected of massage, electricity, or orthopædic appliances. In the rare cases in which the original stimulus to the movement is still present when the patient comes under observation, it will require appropriate treatment. Conjunctivitis, refractive errors, dental caries, enlarged tonsils and adenoids may thus need to be dealt with.

Special Points in Children.—The whole household must unite in a conspiracy to take no notice of the child's movements, except as may be necessary to carry out the prescribed treatment, and all forms of punishment and reproof must be prohibited. If no improvement results the child should be sent to relatives in another town for a time, or admitted to a suitable hospital. In some children an attack of chorea appears to form the starting-point for tics; this sequel is to be avoided by thorough treatment and prolonged convalescence after the attack. Imitative tics are especially prone to occur in children, and the presence of a near relative suffering from a similar disorder is a strong reason for treating the child away from home. Lastly, it is impossible to over-stress the importance of early treatment since tic in childhood is eminently curable, while in adults it is apt to be one of the most intractable of functional nervous disorders.

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Special Articles.

MEDICINE AND THE LAW.

Dangerous Drugs Act Prosecution Fails.

ON June 4th, after taking time to consider his judgment, Mr. Gill, the Westminster magistrate, dismissed a summons against Mr. Robert Lee Dillon, who was charged with obtaining morphine with prescriptions supplied simultaneously from two doctors without disclosure to either doctor that he was being treated by the other. It is a pity that the law on matters of this kind should be contained in departmental regulations and not in the direct legislation of Parliament itself; and, indeed, the position is not so clear but that it may be well to remind practitioners of how the matter stands. In 1921, Regulation 7 of the Regulations of May 20th declared that "no person shall be in possession of any of the drugs" (i.e., morphine, cocaine, &c.) "unless . . . he proves that the drug was supplied for his use by a duly qualified medical practitioner or registered veterinary surgeon or on and in accordance with such a prescription as aforesaid." In October, 1922, a fresh set of Regulations added the words "or attempt to obtain possession of," after the words "No person shall be in possession of." Finally, in 1926, after the report of the Departmental Committee on Morphine and Heroin Addiction had been published and considered, a further paragraph was added at the end of Regulation 7, as follows:—

"Provided that the last foregoing provision shall not apply to any drug supplied to a person for his use by a medical practitioner or in accordance with a prescription if that person was at the time of the supply in course of receiving treatment from another medical practitioner in respect of addition to any of the drugs or otherwise, and of being supplied with any of the drugs by or on a prescription given by that last-mentioned practitioner, and did not disclose that fact to the first-mentioned practitioner before the drug was supplied to him."

In framing the law on these lines the Home Office rejected a suggestion to make it obligatory upon doctors to notify to the Home Office any case in which a person is being treated by the continuous administration of morphine or heroin. It was realised that notification would help the Home Office to detect cases where patients were obtaining supplies concurrently from two or more doctors; but the opinion of the Committee was accepted that notification would impair the confidential relations of doctor and patient and that the benefits of the proposal would hardly outweigh the disadvantages. In the recent case before Mr. Gill the defendant had been treated for repeated attacks of malaria. The magistrate decided in his favour, since there had been no continuity of treatment by two doctors concurrently at the material time.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Social Standing of Medical Students.

THE Leipziger Verband has just published figures dealing with the social standing of medical students in the Prussian Universities. The total number is 4282, including 671 women, and in the report they are divided into three categories, according to whether they come from the upper, middle, or lower classes. Children of the higher Government officials, professors, teachers with academical degrees, clergymen, lawyers, medical men, authors, officers in the army, big landowners, proprietors or managers of large factories and banks, and private employees in high positions, are placed in the first category. The second includes the children of Government officials in secondary positions, small farmers, soldiers, trades-

people, and private employees. In the third category they place the children of workmen, labourers, and minor officials. Of the men students 40·4 per cent., and of the women 52 per cent., fall into the first category, whilst in the second are 57·3 per cent. of the men and 46·7 per cent. of the women, and in the third 1·5 per cent. of the men and 0·5 of the women. (The social standing of 0·8 per cent. of the students could not be ascertained.) Thus the majority of the women students come from the upper classes, but amongst the men the middle classes predominate.

Sale of Medical Practices.

Formerly the sale of medical practices was forbidden not only by the courts of honour as being against the ethics of the profession, but also by the law courts, which often declared contracts of the sort invalid. Recently, however, these views have undergone a certain change. A Berlin lawyer, writing in the *Medizinische Welt*, says that the High Court has recently, on two occasions, declared that the sale of the practice of a deceased medical man by his heirs is valid. Sometimes it is agreed, and has been considered lawful, for the money not to be paid in one sum, but in instalments, and in some cases the vendor continues to receive a share of the income derived from the practice by his successor. The contract must not contain any provision which may tend to deceive the public. For instance, if a provision is made in the contract whereby it is agreed that the vendor's door-plate may continue to be used for a time in order to make the public believe that he is carrying on his practice, such a provision would be contra bonos mores and thus invalid. A case is on record in which a medical man purchased a practice under the condition that he would pay an excessive sum for it, and the High Court objected to the contract on the ground that it would result in the purchaser being induced to extract as much money as he could from his patients, which would be morally unjustifiable. A contract in which it was agreed that the purchaser of a practice should prescribe remedies and preparations devised by the predecessor was also declared invalid. In the eyes of the High Court the medical profession is not a trade in the usual sense of the term, but a public service. Economic questions, therefore, must take a secondary place in the government of its affairs.

The Berlin Municipal Hospitals.

The state of the Berlin municipal hospitals was lately discussed before the Berlin Society for Public Health. Dr. Korach said that the number of beds was obviously too small, so much so that during the recent spread of diphtheria it had been suggested that schools and other public buildings should be converted into hospitals. The municipal hospitals, especially the new ones, are nearly all situated in the suburbs, far from the centre of traffic, and this, according to him, is a drawback for persons injured in street accidents, who have to go a long way before they can be treated; hospitals which would deal with accidents only ought to be established in the centre of the city. Another drawback of the municipal hospitals is that, with the exception of the Virchow Hospital, they have only internal medical and surgical departments, none being provided for nervous diseases, orthopædics, or urology. There are special wards for children's diseases of which the official head is the head of the internal department; in practice, however, the head of the department is an assistant who is interested in that particular branch of medicine. Dr. Korach pleaded for the establishment of special departments, particularly for occupational diseases. Prof. Hofmann, of the municipal health office, stated that to overcome the shortage of beds a new hospital would be erected this year, that the old hospitals had been enlarged and modernised, and that a large private hospital had been taken over by the city. In the new hospitals special departments will be set up, but this was not practicable in the existing ones.

Avertin in Confinements.

At a meeting of the Berlin Gynæcological Society Dr. Hornig has reported on the results obtained with avertin in confinements. In only 75 per cent. of 180 cases has he found it effective as an anæsthetic. The drawbacks to its use were that labour pains became weaker and the second stage was prolonged. Separation of placenta was sometimes made difficult, and atonic hæmorrhage developed. Moreover, in some instances, a state of excitement was observed which was detrimental to an aseptic course of the delivery. He is therefore unable to recommend avertin for obstetrical purposes.

The Minister for Public Instruction, in agreement with the State Examination Commission, has laid it down that candidates who have twice failed to pass a part of the State examination may not take it again. He considers that candidates who have twice proved themselves unable to pass the examination, though they have had time enough in which to prepare, must be regarded as unfit to become qualified medical men.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

The Essentials of a Spa.

AT the recent congress of the Hungarian Balneological Society, Prof. Alexander Korányi said that the progress of science has caused a great change in the requirements which a health resort should satisfy. The modern spa must be a serious institution for treatment on a proper scientific basis. This can only be achieved under the following conditions. First, it must not be a place of entertainment; for as such it cannot be developed and face competition. It must be specialised, and accordingly must receive only patients who are likely to benefit by its particular advantages. It must be served by competent up-to-date specialist doctors, whose presence makes it possible to carry out scientific work connected with the diseases which the methods in use—e.g., baths—are expected to cure or alleviate. There must be hospitals, laboratories, and equipment to ensure that patients shall receive adequate treatment. The organisation of the place must be adapted to the requirements of the patients, and the final control must be in the hands of medical directors of the baths, without regard to the views held in non-medical quarters. An examination of foreign spas shows that the places working on these lines are the most prosperous, while those in which there is no systematic management, where the health of the patients is of secondary importance, and the interests of hotel-keepers are placed in the foreground, are incapable of meeting competition.

Problems of Psycho-analysis.

In an interview given to a medical journal, Dr. Alexander Ferenczi, president of the Hungarian Psycho-analytical Society, said that for the last year or so two important problems had been receiving the attention of most psycho-analysts—namely, analysis by laymen, and the part which should be played by psycho-analysis in education. In particular, Prof. Sigmund Freud and his adherents hold the view that the medical profession is unable to fulfil the immense task of giving the treatment required by all the neurotics, the children inclined to crime, the quarrelling families, and the workers who are inefficient owing to mental conflicts, and that therefore the services of specially trained lay analysts could not be dispensed with. On the other hand, there is a group of prominent psychologists who maintain that only a person holding a medical diploma ought to be permitted to carry out psychological research on new lines and to apply psychological methods to treatment. In Berlin, in America, and even in Paris, many prominent laymen are working in the field of psychological practice and theory. In America, great numbers of the so-called

social workers, and workers in mental hygiene, acquire competent training in the different methods of psychology. Dr. Ferenczi had the opportunity of gaining an insight into the internal life of the staff of the huge warehouse of the Macy firm, employing 10,000 persons, and was surprised to find that there are social workers, mainly well-educated women, who occupy themselves with the mental conflicts of the workers, study their intellectual tendencies, and endeavour to establish an equipoise in their family life and working condition. A group of health workers have acquired special training in nursing and looking after patients who are mentally abnormal. They have their own separate quarters, where they are consulted by those in need of their advice.

On the second question less definite conclusions have been reached, says Dr. Ferenczi, and it is a matter of keen discussion how best to utilise our psycho-analytical knowledge in the education of children and in the upbringing of the very young. One of the pioneers of the cautious combination of psycho-analysis and pedagogy is Freud's daughter, Anna Freud. Only practice and experience over many years will show what the method can effect in education.

Hungarian Rontgen Society.

The membership of this society has now risen to 167, and the scientific meetings which it organises have attracted unexpectedly large audiences. The programmes have been long and varied. Its activities are greatly assisted by the journal which it issues (the *Magyar Röntgen Közlöny*). Post-graduate courses are arranged every year. The society is arranging to produce an up-to-date treatise on the subject and hopes to arrange coöperation with foreign countries. The president is Dr. Béla Kelen, professor of rontgenology in the University of Budapest. The suggestion has been made that the authorities should be persuaded to make this subject a regular and compulsory part of the medical curriculum at the Hungarian universities.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

The Cost of Medical Care.

FOR some three years a small but influential group of physicians, economists, and sanitarians has been concerned with problems related to the increasing cost of medical care. On April 1st, 1926, following an informal conference at Washington, a committee was appointed to develop plans for a comprehensive survey of the situation. This committee has grown until it now comprises 42 persons, of whom 23 are medical graduates, and the remainder prominent economists and representatives of the public interest. The chairman is Dr. Ray Lyman Wilbur, president of Stanford University, and a past-president of the A.M.A. Dr. C.-E. A. Winslow, of Yale, is vice-chairman, and the director of studies is Dr. Harry H. Moore, whose publications on "Public Health in the United States," and "American Medicine and the People's Health," are no doubt well known in England as here. A five years' programme of inquiry has been evolved, designed to answer the three following questions:—

1. What data are now available showing the incidence of disease and disability requiring medical services, and what are the established facilities for dealing with them?

2. What do existing services cost the people and what return accrues to the physician and other agents furnishing such services?

3. What specially organised facilities for medical care serving particular groups of the population may now be found, and how do they compare in adequacy and economy with unorganised services?

Such data as have been already collected indicate that the committee is engaged on an investigation of great import. The average earnings of 30,000,000 people industrially employed were, in 1925, in the neighbourhood of $1250. Since more than one member of a family may be employed, the average family income of this class is probably around $2000. The income required to maintain a family of four in the Eastern States at the end of 1925 was estimated at $1550. That many families cannot pay their doctor's bills in time of sickness is a matter of experience as well as a valid conclusion from such figures as those above. The cost to the patient of medical service is high. For example, the *minimum* cost of maternity service by a general practitioner is, according to the Metropolitan Life Insurance Company, about $150, and a specialist's cure costs from $400 to $500. Yet the doctors do not get rich. I am reliably informed that for the small town from which I am writing the average net income of the physicians is less than $2000 a year. The expense of running an office is considerable; the amount of free work is often very high. It is said that in one large city the majority of tonsillectomies are performed free of charge. An alternative to free work and bad debts would seem to be insurance, but the profession is almost solid in its aversion to anything that resembles "State medicine." It is almost universally believed that English doctors are suffering martyrdom from this system. Is it possible that the insurance principle can be introduced without the patronage or supervision of the State? One of the studies outlined is to investigate "the extent of private medical service on a yearly basis." Others deal with such questions as organised medical service in large industries and organised health services in universities and colleges. The coöperation of the Metropolitan Life Insurance Company makes it certain that the type of health assurance which they have so successfully sponsored will also be taken into account.

HARVEIAN SOCIETY OF LONDON.

THE annual dinner of this Society was held on Thursday, June 14th, at the Connaught Rooms, London, W.C., Dr. Herbert French, the President, in the chair.

After the loyal toasts Mr. H. W. Carson, President of the Medical Society of London, proposed the prosperity of the Harveian Society, one of a triumvirate, the others being the Medical Society of London and the Hunterian Society, which escaped the great fusion whose result was the Royal Society of Medicine. Of these the Hunterian Society had been largely associated with the London Hospital, while the Harveian Society had been specially connected with St. Mary's Hospital, but the lists of membership showed that the constituent practitioners were really recruited from all schools, and in many cases men were members of two or more of the societies. The annual dinner of the Harveian Society was a function, he understood, which owed its origin to Sir D'Arcy Power and Dr. William Hill, to whom the idea occurred during their secretaryship, appositely, he thought, inasmuch as the former, as an archæologist, would see to the age of the vintages, while the latter specialised in the region of the gullet. Mr. Carson recalled to the minds of the assembly the founding of a prize in connexion with the Harveian Society by Mr. Buckston Browne in memory of his son, and then asked the company to drink the health of their Chairman, the Physician to His Majesty's Household.

Dr. French, in reply, was glad to give a thoroughly good account of the position of the Society. The number of members was going up, the financial position was sound, while the debates had been often of great interest because of the prominent part played in them by general practitioners, and this had always been a special aspect of the Society's activities. Pointing out that the toast which was to follow would receive reply from certain distinguished guests, the Chairman said that, as a matter of fact, everyone in the room was a guest, the guest of a member of the Society who desired to remain anonymous. This same open-handed member, he added, had announced

the intention not only of defraying all the expenses this evening, but of giving, now and not by testamentary disposition, a sum of money to the Society for the purposes of the annual dinner, the impulse for his generosity being the large number of friends whom he had made through membership of the Harveian Society in his early days of practice.

At this point Mrs. Kate Philips recited the humorous ballad, the "Browns of Walham Green," whose sad plight, as the result of over-attention to medical edicts laid down by THE LANCET, was followed with much amusement by the audience.

The toast of the visitors was proposed by Mr. C. W. G. Bryan, who said that in giving the health of the guests he was really putting forward over 99 per cent. of the company, whose case had been already dealt with by Mr. Carson. He briefly enumerated the principal visitors, naming the Services or Societies which they represented, and associated with the toast Mr. Augustine Birrell, Surgeon Vice-Admiral Gaskell, and Sir Henry Curtis Bennett.

Mr. Birrell, in reply, said that he had known Mr. Buckston Browne since 1861, for they had been at school together; he had dined with him frequently during that long friendship, and now it appeared he was his guest again. He had some sense of grievance he said, that the name of Harvey had never been mentioned at this dinner of the Harveian Society, because, on learning that he would have to reply for the visitors, he had read up the life of Harvey as written in the "Dictionary of National Biography" by his old friend Norman Moore. To the knowledge of the circulation of the blood thus gained he would contribute the personal observation that nothing quickened the circulation of the blood of an author more certainly than a quick circulation of his books.

Among those present at the dinner were the President of the Royal College of Physicians of London, the Master of the Apothecaries' Society, the Directors-General of the Medical Staff of the Army and of the Air Force, the Presidents of the Royal Society of Medicine, the Medico-Legal Society, the Hunterian Society, the West London Medico-Chirurgical Society, the Chelsea Clinical Society, the Regius Professor of Medicine at Oxford, the Curator of the Hunterian Museum, and the Secretary of the Royal College of Surgeons of England.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1927 statistics of a group of districts of varying local government status:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
West Ham C.B. (315,400)	18·9	11·0	1·10	1·11	2·7	1·5	67/26	5·7	3·0
Leicestershire C.C. (283,700)	17·2	11·6	0·97	1·35	2·2	1·5	65	2·9	3·5
Northampton C.B. (93,260)	13·7	12·0	1·29	1·42	2·1	1·7	61/37	5·5	5·5
Cambridge B... (58,680)	13·9	12·7	0·95	1·36	3·0	1·2	55/29	2·4	0·0
Stafford B. .. (28,830)	15·8	10·0	0·83	1·11	1·9	1·3	48/26	4·4	4·4
Bentley-with-Arksey U.D. (16,170)	19·2	11·1	1·05	0·74	1·5	1·4	70	0·0	6·4

West Ham.

Dr. F. Garland Collins reports that the sanatorium, with accommodation for 40 children suffering from pulmonary tuberculosis, on Langdon Hills was opened in November. The site comprises 100 acres and is in one of the highest parts of Essex overlooking the mouth of the Thames. It is about 20 miles from West Ham and 270 ft. above sea-level. The existing farmhouse has been adapted for the nursing staff and the new buildings are of the bungalow type and constructed of "Frazzi" material. This institution will obviate the necessity of sending away children to outside sanatoriums. An artificial sunlight clinic in connexion with the maternity and child welfare work was begun in 1925. During 1927, 684 patients were treated and a proposal to extend this treatment to school-children has been forwarded to the Board of Education for their approval. A dental clinic has been inaugurated for children under 5 years of age. A scheme is now before the Board of Control for the establishment at Ockenden, Essex, of a colony to accommodate 500 variously graded mentally defective persons from West Ham and other districts. The colony is so planned as to be capable of being made available for 1000 cases. Dr. Collins points out that West Ham, like the rest of the country, has felt acutely the lack of suitable institutional treatment for mental defectives.

West Ham suffered considerably from the floods which occurred in the beginning of the present year. No less than 2874 dwellings were involved, but prompt and vigorous action prevented undue hardship among the victims. Diphtheria was unusually prevalent during the year, the notifications numbering 954 and the recorded deaths 40. The council have now provided facilities for the immunisation of children.

Dr. Collins is not favourably impressed with the methods of some of the recent plants for dealing with refuse. He criticises in particular the revolving belt and the hand-sorting of all kinds of objectionable refuse. When heating or cooking is done by gas or electricity the material put in the dustbins is liable to be more noxious. Proceedings were taken against a company which dealt with the skinning of rabbits, hares, cats, and dogs, for carrying on the business of a fellmonger without a licence. The summons was dismissed with costs against the corporation, apparently as the result of expert evidence to the effect that the only animals dealt with by a fellmonger were sheep and lambs. Dr. Collins states that at one of his visits to the premises he saw an accumulation of dead cats and dogs in various stages of decomposition.

The residential open-air school for 80 boys near Ongar and the day open-air school for 60 girls did good work, and both escaped infection during an extensive epidemic of scarlet fever. Of the samples of designated milks tested 4 "Certified," 4 out of 10 "Grade A (T.T.)," 7 out of 8 "Grade A," and 31 out of 36 "pasteurised" attained their respective standards. This result was better than in the previous year.

The work done by the "home helps" employed by the council is found to be of great value in saving the mothers from getting up too soon after confinement; 1067 mothers were provided with this assistance. Of the 80 midwives who practised during 1927, only one was untrained, and she retired at the end of the year. The births numbered 5991 and 3701 were attended by midwives, who summoned medical help in 695 cases. Particulars are given of the 18 deaths from pregnancy or childbirth. Three of these were due to miscarriages in the first three months of pregnancy and in the case of one there was a definite history of an abortifacient having been taken. Of the remaining 15, 4 were sent into hospital as emergency cases and 11 were delivered at home. Three of the cases had attended the antenatal clinic, of whom one developed eclampsia suddenly, another was taken ill while away on holiday, and the third died from ante-partum hæmorrhage (probably placenta

prævia). Dr. Collins is strongly of the opinion that amongst expectant mothers the practice of taking noxious ecbolic drugs is very prevalent, and is increasing, and that the health of the mothers and the vitality of the infants is affected thereby.

Leicestershire.

Dr. J. A. Fairer divides his county by occupations into "agricultural," "industrial," and "mining and quarrying" areas. The nutrition of the school-children in the agricultural areas is the best. There was some evidence that the coal stoppage of 1926 influenced adversely the nutrition of the younger children in the colliery districts, but it was a matter of interest that the colliery districts escaped the epidemic of poliomyelitis. During 1927 there were only 9 cases of poliomyelitis notified as compared with 72 in 1926. Full investigation by Dr. J. M. Mackintosh of the present condition of the sufferers by the 1926 epidemic is included in the present report. Practically no light is thrown on the means by which the infection was spread. Of 80 cases investigated 9 died directly from poliomyelitis and 2 from bronchopneumonia during 1927. Seven recovered completely, 14 showed a mild degree of paralysis, 29 had a moderate degree of paralysis and usually wore apparatus, 11 had severe paralysis and were unable to walk without apparatus, while 8 were practically helpless and unable to walk even with apparatus. The foregoing statement applies to the condition after the lapse of one year. During 1927 the county council approved the provision of ten beds for orthopædic cases at the Manfield Orthopædic Hospital, Northampton. Four of the beds are intended for surgical tuberculosis, three for the maternity and child welfare centres, and three for the school-children. The selection of the cases is made by the honorary surgeons of the clinic at the Leicester Royal Infirmary, which institution, Dr. Fairer says, carries nearly the whole burden of hospital treatment in a county in which the voluntary spirit is strong.

Dr. Fairer makes special complaint of the tents, vans, and sheds which have come into use as dwellings owing to the house shortage and which are entirely unsuitable for the purpose. On a fine day the surroundings of these so-called dwellings are highly unsatisfactory, but on a stormy, snowy, or wet day "the state of affairs is truly appalling." It is suggested that matters might be improved by the adoption of Section 43 of the Public Health Act of 1925.

Twenty-two complaints of tuberculous milk were received from outside authorities: 22 dairy farms were visited, but only two offending cows were discovered.

Northampton.

Dr. Stephen Rowland refers to an interesting occurrence in this county borough on Dec. 7th last. A prominent citizen of the town, to mark his eightieth birthday, invited all the octogenarians to luncheon, and this brought out the fact that at least 777 residents had reached or exceeded this age. The daily consumption of milk is 5000 gallons, of which 150 are "Grade A (T.T.)," 1700 "Pasteurised," and the rest ordinary milk. Dr. Rowland refers to the fact that the milk trade is gradually coming to be regarded as one which requires special training and special premises. Towards the end of January the arrival of an influenza epidemic was heralded by the announcement that the attendance in the infants' department of one of the schools had fallen to 40 per cent. By the end of February the epidemic had passed from Northampton. The deaths attributed to it were 54, all of them at ages over 15. In the pandemic year 1918 there were 207 deaths, and a noticeable feature of the 1927 epidemic was the rapid recovery made by most of the patients. The late notification of pulmonary tuberculosis results in a longer waiting-list of patients for the "advanced" wards than for admission to Creaton Sanatorium. In 1927 the percentage of early notifications was 18, of intermediate 62, and of advanced 20, whereas in 1926 the percentage of early notifications was 36, of intermediate 48, and of advanced 16.

Cambridge.

Dr. Andrew J. Laird draws attention to the fact that 21 of the 45 infant deaths in the borough occurred during the first week of life. For the second year in succession there were no maternal deaths from childbirth in Cambridge.

A successful Health and Cleanliness Exhibition, opened by the Vice-Chancellor of the University, was held in the Guildhall, March 29th to April 2nd, and attracted about 7000 visitors. A very complete programme of lectures and films was arranged. A clean milk competition was conducted from July, 1926, to June, 1927, and attracted 13 producers and 12 retailers as competitors. Monthly samples were taken for analysis and the results were communicated at once to each competitor. The tests included total bacterial count, *B. coli* content, keeping quality, sediment, and fat content. Of the 13 producers five reached the Grade A standard for more than half the tests. The retailers did not do so well, and the conclusion was reached that milk retailed by men who also produce it is cleaner than milk bought by a retailer from someone else. "The competition," says Dr. Laird, "has proved extremely valuable."

Stafford.

Dr. J. T. Macnab mentions that housing for the poorer families of the borough promises to reach at least a partial solution if the proposal to build some lower rented houses on the new estate bears fruit. Stafford has its share of slum houses, although they are not massed together in slums. Within the last few years stables, cowsheds, and even a "duck-pen" (so called) have been seized upon by tenants, who required houses, and there are a good many occupied houses in the town to-day which are not greatly superior. If a real effort is to be made to grapple with this problem the management of the proposed low-rented houses will require special consideration, and Dr. Macnab favours the Octavia Hill system. As an example of what can be done by such a system he cites the special visitation by the health visitor of 20 houses built in 1924 for poorer families. The first section of the new sewage disposal works on the activated sludge principle dealing with one-sixth of the sewage has turned out a consistently satisfactory effluent for more than two years, and it is hoped that the remaining sections will be completed during 1928. The waste water closets which number over 2000 still continue to give trouble owing to stoppages. They are gradually being converted to ordinary water closets. In Stafford industrial smoke is small compared with domestic smoke. Dr. Macnab thinks that the present-day tendency for local authorities to urge citizens to burn their own refuse is a retrograde one. The modern destructor is especially designed to consume its own smoke, and this is not likely to be achieved in the domestic grate when the householder burns his own refuse. The domestic smoke so produced helps to soil the neighbours' washing, so that any small saving in rates is counterbalanced by extra cost of soap and cleaning materials. During the last three years over 3000 gas and electric heating appliances have been installed in Stafford.

Bentley with Arksey.

Dr. A. B. Dunne says the main industry of this urban district is coal-mining, the men being mostly employed in the Bentley Colliery, but a large number work in outside collieries and are conveyed to and fro by motor bus. The Bentley Colliery maintain two pumping stations to drain the land lowered by the colliery workings. The infant mortality-rate was 70 as compared with 98 in the previous year, and has only once before approached this figure—namely, in 1912, when it was 68. The houses in the district are brick houses of a good class usually built in pairs and about 12 to the acre, and with good-sized gardens attached. During the year the condition of the vans

and sheds in various parts of the district has created a difficult problem for the council, which has not yet been solved. The 66 notified cases of small-pox were all admitted to hospital and there were no deaths. There were 76 notifications of diphtheria as compared with 18 in the previous year. The season was an extraordinarily wet one and most of the district is below the 25 ft. contour level.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 9TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 365 (last week 286); scarlet fever, 1562; diphtheria, 898; enteric fever, 62; pneumonia, 1227; puerperal fever, 59; puerperal pyrexia, 92; cerebro-spinal fever, 7; acute poliomyelitis, 8; encephalitis lethargica, 27; typhus fever, 1; dysentery, 12; ophthalmia neonatorum, 111. No case of cholera or plague was notified during the week. The case of typhus fever was notified in Stepney Metropolitan Borough, and was reported in our issue of June 16th, p. 1224.

The cases of small-pox were notified from the following 26 counties: London, 49 (Lambeth 1, Poplar 1, St. Marylebone 20, Southwark 2, Wandsworth 24, City of Westminster 1); Bedford, 4; Berks, 1 (Maidenhead); Chester, 2; Cornwall, 1; Derby, 10; Durham, 98; Essex, 1 (Leyton); Gloucester, 1; Hereford, 1; Kent, 1 (Bromley); Lancaster, 17; Norfolk, 8; Northumberland, 20; Nottingham, 12; Soke of Peterborough, 1; Southampton, 1; Stafford, 18; Surrey, 2 (Mitcham); Warwick, 6; Yorks, East Riding, 2; North Riding, 6; West Riding, 49; Brecknock, 2; Glamorgan, 21; Monmouth, 31.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on June 12th–13th was as follows: Small-pox, 67 under treatment, 2 under observation; scarlet fever, 1782; diphtheria, 2032; enteric fever, 22; measles, 818; whooping-cough, 146; puerperal fever, 17 (plus 17 babies); encephalitis lethargica, 122; poliomyelitis, 1; "other diseases," 26. At St. Margaret's Hospital there were 19 babies (plus 15 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 34 (12) from measles, 6 (2) from scarlet fever, 32 (5) from whooping-cough, 27 (8) from diphtheria, 33 (5) from diarrhœa and enteritis under two years, and 42 (7) from influenza. The figures in parentheses are those for London itself.

Of the fatal cases of measles outside London, 7 occurred at Liverpool. Of the fatal cases of whooping-cough outside London, 3 were reported from Birmingham, 10 from Liverpool, 4 from Manchester, and 3 from Newcastle-on-Tyne, while Glasgow showed 6 deaths for the same week.

The number of stillbirths registered during the week was 281 in the great towns (corresponding to a rate of 36 per 1000 total births), including 47 in London.

DONATIONS AND BEQUESTS.—The late Mr. L. J. Friedlander, whose estate is valued at £145,818 with net personalty of £131,722, among other bequests, left £20,000 in trust for his sister and then to such hospitals as his executors may select, while half the residue of the property is similarly left to his executors for hospital charities.—Sir William Selby Church left £1000 to the Royal Society of Medicine and £100 to Epsom College.—Mr. Charles Edward Burnby, Sheffield, has bequeathed £500 each to the Sheffield Royal Hospital, the Sheffield Infirmary, the Jessop Hospital, Sheffield, and the Sheffield Blind Institution.—Mr. Laurence Maclaren, of Liverpool, made bequests of £17,000 to charities, including £5000 to the Royal Southern Hospital, Liverpool; £2000 each to the Liverpool Royal Infirmary and the David Lewis Northern Hospital; £1000 each to the Bootle Borough Hospital and the Royal Liverpool Children's Hospital; £500 each to the Stanley Hospital, Liverpool, and the Liverpool Home for Incurables; £300 to the Woolton Convalescent Institution; £1000 to the General Public Hospital, St. John, New Brunswick, Canada; and £250 each to the Home for Incurables and the Association for the Prevention of Tuberculosis there.

Correspondence.

"Audi alteram partem."

ENCEPHALOMYELITIS FOLLOWING VACCINATION.

To the Editor of THE LANCET.

SIR,—The statement in the interesting letter by Dr. D. Hunter and Dr. W. R. Brain in your last issue (p. 1250), that their six cases of acute meningo-encephalomyelitis "differed clinically in many respects from acute epidemic encephalitis lethargica, and showed a marked clinical similarity to post-vaccinal encephalitis," would imply that this latter affection possesses a more or less stereotyped symptomatology. That has not been my impression, and I should say that only in the most general sense can any uniformity of symptoms in recorded case reports of post-vaccinal encephalitis be postulated. Without incurring the necessity of alluding to British experience which will shortly be available in a Government report, I may simply refer to Lucksch's analysis of clinical types observed in continental cases of post-vaccinal nervous disturbance. No fewer than six types are noted and I here append them. (1) Involvement of meninges only, so-called meningitis serosa. (2) Cases associated with headache, vomiting, convulsions, pareses, and somnolence without ocular palsies. (3) Like (2), but presenting trismus or tetanus-like symptoms. (4) Like (2), but presenting ocular symptoms, and consequently approaching closely to encephalitis lethargica. (5) More diffuse forms with bladder disturbances. (6) Cases showing cord involvement mainly, and simulating poliomyelitis anterior.

Unfortunately, in many cases clinical descriptions are meagre and entirely inadequate for purposes of accurate clinical filing. It is all the more necessary, therefore, that whenever opportunity occurs, clinical records should be amplified by careful autopsy and fullest investigation of the central nervous system from the the histological and experimental point of view. Much progress may be hoped from the investigation, on lines laid down by Dr. Hunter and Dr. Brain, of anomalous types of encephalomyelitis disseminata. At the present time, however, it is in my opinion unwise to assume that post-vaccinal nervous sequelæ conform to any very hard-and-fast clinical type. Hitherto, purely clinical investigation has helped little towards the elucidation of this serious sequela.

I am, Sir, yours faithfully,

J. C. G. LEDINGHAM.

Lister Institute, London, June 16th, 1928.

RECENT KNOWLEDGE OF HOOKWORM DISEASE.

To the Editor of THE LANCET.

SIR,—An editorial note to a letter of mine appearing in THE LANCET of May 19th (p. 1043) remarks that "we possess no convenient résumé in a single cover of the immense mass of recent knowledge regarding hookworm disease in various parts of the world." Commenting on this in your issue of June 16th (p. 1251) Dr. Carozzi draws attention to two publications which are evidently felt to fill the need. The first, the admirable Publication 11 of the Rockefeller Foundation, International Health Board, dated 1922, is an arranged bibliography of 5680 items, but without an index to the arrangement. It corresponds to the necessarily indigestible list of references at the end of a scientific paper, and not to the predigested summary which commonly precedes it and whose absence is clearly the matter on which you comment.

The second publication, from the International Labour Office, Dr. Carozzi believes to give a fairly complete account of the different aspects of the problem of ankylostomiasis. The first requisite of such an account is reliability. The International

Labour Office should conform to the International Laws of Zoological Nomenclature. The hookworms of man do not belong to the genus *Uncinaria*. Such designations as *Ankylostoma Dubini*, *A. Stiles*, and *Ankylostoma duodenale Dubini* (E. Perroncito) are lawless, and meaningless, or confusing. *A. duodenale* is said to have been studied by Perroncito and Railliet. The greatest name of all in this connexion is omitted, Looss, and the omission explains much. The figures given, after Perroncito, of the head end of this worm are inaccurate, and are perhaps composite figures of the two common hookworms of man, *Ancylostoma duodenale* and *Necator americanus*. Looss's drawings are unsurpassed in accuracy and artistic merit. Others, including possibly my own, follow the same line, but at an easily discernible artistic interval. At all events accurate figures are readily obtainable. That entitled "Female ankylostoma filled with eggs" actually depicts a small portion of one of the uteri. A table facilitating differentiation of the two parasites is attributed to me in 1919. I pointed out a few of these differences in 1913, but not in 1919; I do not believe that the others are correct. I claim, then, an established alibi at the time when this bastard with its embarrassing likeness to my own offspring was procreated. *A. duodenale* will not be found in the fæces if search be made for a pale, flesh-coloured, red worm. Regarding minute anatomy, the presence of the piercing teeth at the bottom of the oral cavity is unmentioned. Of the œsophagus it is said that it dilates into a muscular stomach, a statement taken from Perroncito. Of this Looss wrote 23 years ago that the description was incomprehensible. Its repetition to-day is less understandable than ever. Concerning eggs, and disregarding the slip which makes the breadth greater than the length, it is not the case that those of *A. duodenale* have a double-outlined shell, thicker and less fragile than those of *N. americanus*, that any difference in segmentation between those of the two species is discernible, that only a quarter of the eggs produced by hookworms are viable, or that their characteristic appearance prevents likelihood of confusion with those of other parasites. Nor is it the case that a saturated solution of sodium chloride preserves hookworm eggs for diagnosis, while Teleman's method of concentrating eggs for this purpose, advised in the article, has for many years been, apparently completely, abandoned as ineffective and as destructive of valuable microscopes. Culture does not necessarily reveal 99 per cent. of "carriers." It is stated that at least 20 million persons are infected. This is strictly true—but misleading, since 800 million is perhaps not an over-statement. And that being so, and there being, as I believe, no evidence that most infected persons can be dismissed as "carriers" and much to suggest that they cannot, it is regrettable that an article from an office of the League of Nations, and one dealing with so vital a subject, should fall so deplorably short of the admirable standard set, for example, by the League's publications on malaria which have forwarded knowledge in the most striking manner. I have not dealt with the whole article, but it follows, Sir, that my criticisms of it have not weakened the truth of the final sentence of my original letter or of your own comment thereupon.

I am, Sir, yours faithfully,

Ealing, June 16th, 1928. CLAYTON LANE.

A TREATMENT FOR HAY FEVER.

To the Editor of THE LANCET.

SIR,—I have had good results from a simple method of treating hay fever, which was evolved by experiment on myself. It consists in spraying the nostrils with a 1 per cent. solution of picric acid in water every day for about a fortnight before the onset of symptoms, and in giving grs. 3 of valerianate of zinc in a pill three times a day during the whole of the hay fever period. Cases which have not come under observation before the attack may be treated in the same way, but before using the picric acid it is necessary to reduce the swelling of the nasal mucosa by spraying with an adrenalin chloride solution, 1 in 1000. When picric acid is used for hay fever the spray should be a very fine one, practically a mist, and the patient instructed to keep the mouth wide open, and to breathe deeply during the process, thus preventing any of the solution from getting into the larynx. In one case, where I neglected this precaution, and was using rather a coarse spray, the patient had an attack of laryngeal spasm, and didn't like it. Considerable success has attended this treatment.

I am, Sir, yours faithfully,

Charmouth, Dorset, June 18th. T. PAGAN LOWE.

VARICOSE ULCERS: ULTRA-VIOLET LIGHT AND UNNA'S PASTE DRESSINGS.

To the Editor of THE LANCET.

SIR,—Dr. D. Colebrook's article on a comparison of treatment of varicose ulcers by ultra-violet light and Unna's paste, published in THE LANCET of May 5th, demands some comment.

1. From the addendum it is clear that most of the work was carried out with sub-erythema doses. In only 25 per cent. of the doses was the radiation equivalent to an erythema dose on normal skin. The number of doses with the water-cooled lamp was almost negligible, less than 10 per cent. It is not quite clear whether an attempt was made to treat the ulcerated surface, the edges of the ulcer, and the surrounding skin with different doses at the same time. 2. The frequency of treatment in the 31 light cases was as follows: 18 received less than two exposures a week, 4 were treated twice weekly, 7 between two and three (nearer two than three) times a week, and only 2 cases received three or more treatments per week. 3. Between exposures "no support other than that which the patient was in the habit of wearing" was allowed, so it follows that some of the ambulatory cases were permitted to walk about with no support for their distended veins.

The failure to heal ulcers with ultra-violet rays as given by Dr. Colebrook is not surprising. Surely even the greatest enthusiast has not attributed such potency to the rays, as to imagine that a varicose ulcer, possibly of many years duration, could be healed by a sub-erythema dose given less than twice a week. The work was undertaken because of the various claims for the value of ultra-violet rays in varicose ulcers. Dr. Schiller,[1] amongst others, has claimed good results, but there is little resemblance between his technique and that of Dr. Colebrook. Dr. Colebrook's suggestion that the ultra-violet treatment given by her played an unimportant part in the cases which did improve is correct, as the amount they had was negligible.

There is, moreover, a discrepancy between the first table on page 906 and the addendum. From the table it would appear that the worst ulcers were treated with Unna's paste; yet from the addendum it can be seen that the largest ulcer treated with light was so extensive that it covered three quarters of the whole leg, and was not measured. (Incidentally, this ulcer received 10 sub-erythema exposures in six weeks. Is it any wonder that it is reported as I.S.Q. at the end of six weeks? One would be glad to know whether Unna's paste was tried subsequently in this case, and with what result.) Also, the average size of the ulcers on radiation (it is true that only a portion of some may have been given light) was 22 sq. cm.; the average size of those treated by Unna's paste was 13 sq. cm.

It is not my purpose to decry the use of Unna's paste, but simply to demonstrate that from the published report no conclusions can be drawn as to the value of ultra-violet rays in varicose ulcers.

I am, Sir, yours faithfully,

London, W., June 9th, 1928. M. WEINBREN.

[1] A. E. Schiller: Leg Ulcers: their Treatment by Ultra-violet, Arch. Phys., Therapy, X Ray, and Radium, vol. viii., No. 2, February, 1927.

MEMORIAL TO DR. IRIS FOX.

To the Editor of THE LANCET.

SIR,—An opportunity arises in the proposed xtension of the pathological department of the oyal Free Hospital to erect a permanent memorial o Iris Fox, who gave her life in the course of her work n that department. We wish to raise a sufficient fund o build and equip a laboratory or library for research nd name it after Iris Fox. We believe that many of er friends and those whom she taught will welcome ne opportunity of contributing to this fund to erpetuate her memory. A letter from the medical chool has already been sent to past and present udents, explaining the need for the general extension f the pathological department. It is hoped that the resent communication may reach any who have been issed, and who would like their contribution to be evoted to the special Iris Fox Fund, as well as any her friends who would care to send a gift. Donations ould be made payable to the "Iris Fox Memorial und," and be sent to Miss Lorel Goodfellow, Hon. ecretary and Treasurer, Flat 3, 28, John-street, edford-row, London, W.C.1.

We are, Sir, yours faithfully,

FLORENCE E. BARRETT, HILDA M. HALLIDAY,
J. HENRY DIBLE, CLEMENT E. SHATTOCK,
HILDA FOX, H. WINIFRED STURGE,
LUCY WILLS.

June 13th, 1928.

*** The proposal is, we understand, to remodel the esent pathological block, which was built in 1914–15, nd to add a new wing to it. The present department, hich is very overcrowded, includes five qualified sistants working under the professor, some seven boratory attendants, and a group of 12 to 20 students. he most urgent need is for a biochemical laboratory, nt a new clinical laboratory is also required for udents to work on their clinical cases, as well as rther accommodation for research workers and for e training of assistants. It is also proposed to form small library of books for reference and current urnals, and to provide for the proper housing of cords.—ED. L.

OVARIAN HÆMORRHAGE.

To the Editor of THE LANCET.

SIR,—In reporting, on p. 1221 of your last issue, series of cases of ovarian hæmorrhage simulating ppendicitis, I briefly discussed the pathology of the ndition. My attention has since been drawn to r. Wilfred Shaw's[1] extensive observations on this bject, which make it clear that rupture of the aafian follicle is not (as I suggested) associated with eeding, and that the corpus luteum in its earliest ages is free from blood. His investigations show at hæmorrhage takes place during the stage of scularisation. and rarely also during involution; exaggeration under abnormal conditions is liable distend the follicle and produce urgent symptoms, in the cases described.

I am, Sir, yours faithfully,

Southend-on-Sea, June 19th, 1928. R. K. WILSON.

[1] Some Pathological Forms of Corpus Luteum. Jour. Obstet. Gynæc. Brit. Emp., 1927, xxxiv., 300; Ovulation in the man Ovary, its Mechanism and Anomalies. Ibid., p. 469.

A HOSPITAL FOR THE MIDDLE CLASSES.—Croxted use, West Dulwich, is being converted into a hospital of beds to be devoted solely to the needs of the middle classes. stands in grounds of between three and four acres, and es its inception to a small body of doctors and other fessional men resident in the district. It is to be called West Dulwich General Hospital and will be staffed inly by local medical men with the help of consultants. is expected that patients' payments will cover the greater t of the cost of maintenance: the balance will have to defrayed by voluntary subscriptions.

Obituary.

WILLIAM JAMES HOWARTH, C.B.E., M.D., CH.B. VICT., D.P.H.,

LATE MEDICAL OFFICER OF HEALTH TO THE CITY OF LONDON.

WE regret to announce the death of Dr. William James Howarth, until recently the medical officer of health to the City of London, which occurred on Friday, June 15th, in the sixtieth year of his age.

William James Howarth was educated at Manchester Grammar School and Owen's College. He graduated M.B., Ch.B. in 1891, and proceeded to the M.D. degree two years later. Having held resident appointments at the Manchester Royal Infirmary and at the Loughborough General Hospital, he decided to enter the public health service. He acquired the diploma of D.P.H. from the old Victoria University in 1896, and was immediately appointed medical officer of health for the borough of Bury. He held this post for two years, and was then for a brief time medical officer of health for the city of Derby and in 1908 was appointed medical officer of health and school medical officer for the county of Kent. He brought to his new post a high reputation as an administrator and this he justified in the very different atmosphere of a county health department. He developed health organisation in Kent on lines that were followed in many other areas, and there is no doubt that his work here led directly to his appointment as medical officer of health for the City of London in 1912 on the retirement of Dr. W. H. Collingridge. This post he held with distinguished success for 15 years, and his breakdown while still in middle life was a real loss to public health.

DR. W. J. HOWARTH.

Photograph by Elliott and Fry.

In connexion with the City of London Dr. Howarth necessarily held many important posts both in an active and an advisory capacity. He made his particular mark in connexion with food, and especially meat-supply, but he was an efficient officer over the whole range of his duties. He had a well-developed faculty of concentrating on the matter in hand and a clear-sighted vision which enabled him to determine what was the matter in hand. Shortly after being elected it became obvious to him that the work to which he could best devote his energies in London was that of meat inspection, which at that time, although carried out very well in a number of areas, was but indifferently done in a still larger number. The huge cattle market at Islington and the Central Meat Market at Smithfield afforded him an almost unparalleled field, of which he was prompt to take advantage. A quick worker and rapid thinker he soon mastered the problems set before him. In many instances these problems were merely those which he had met, on a smaller scale, in his earlier appointments, but his position in the City of London called for the issue of reasoned and authoritative judgments, which were duly forthcoming.

No one possessed a more intimate knowledge than he of butchers, their manners and customs, their likes and dislikes; very few officials were listened to by the butchering trade with more respect even on the somewhat thorny question of humane slaughtering. His Chadwick lectures on the Control of the Food-supply, quarries of information, were attended by crowded audiences, and the same occurred whenever he spoke in public on the Meat Regulations. On committees dealing with meat problems his services were of the first use; his work as a member of the Departmental Committee on Meat Inspection especially standing out. To the energy of this Committee are due the comprehensive Public Health Meat Regulations, 1924, which marked a decided step forward in the endeavour to secure cleanliness of the meat sold to the public, and Howarth helped to frame a scheme of meat inspection which is not only thorough but practical and workable. His reports to the Sanitary Committee of the City of London Corporation, always written after much careful observation and thought, left little more to be said, and his presence on deputations abroad to visit institutions dealing with the supply of food to this country was always welcomed by foreign colleagues to whom his knowledge and his attractive personality appealed. It is needless to say that at the Guildhall he possessed the complete confidence of the Corporation; he could rely on their support in dealing with many matters when health considerations involved difficulties for the city merchants. But while as a sanitarian he was quite fearless in dealing with the commercial community he spared no pains to be reasonable in his requirements.

The outbreak of war and the consequent depletion of his staff created many difficulties in the City health department. Howarth rose to the occasion and accepted the responsibility cheerfully which fell upon him as the chief rationing officer for London and the Home Counties. He worked unceasingly as a member of various departmental committees of the Ministry of Health and on the Board of Management of the Low Temperature Research Station at Cambridge, and the Milroy Lectures, which he delivered before the Royal College of Physicians of London in 1917 form a remarkable epitome of his multifarious knowledge on the subject. The three Lectures were published in full in THE LANCET, and to the last one there was appended a synopsis of the difficulties to be met with in the organisation of meat inspection at the time, and indications for placing that inspection on a more satisfactory basis. The future requirements were set out with a view to securing uniformity of action in a routine of meat inspection which could be made a compulsory duty on all urban sanitary authorities; the problems presented by boneless and canned meat and by imported carcasses were dealt with in particular detail, and the necessary regulations suggested for a system of meat-marking and for the investigation of the conditions in rural slaughter-houses. The lectures were exhaustive, and the lessons contained in them have been consistently applied.

There is no doubt that the years of the war tried Howarth's physical and mental capacities more than he would allow, but it was not in him to spare himself. In 1921 he was elected President of the Society of Medical Officers of Health, and worked hard in the interests of a Society with which he had for many years been conspicuously associated. But soon after the completion of his year of office his friends noticed the first signs of the insidious illness that caused his death. It became apparent that difficulties which he used to surmount with ease began to cause him needless worry. He had, moreover, to endure the death of his elder son at school, and was deeply affected by the tragedy. He could not, however, be persuaded to take the complete rest that he needed, and to this reluctance to give up work the abbreviation of his valuable career may be traced.

"My early recollections of Dr. Howarth," writes Sir William Hamer, "are of his work in a field of inquiry to which he was destined to give particular attention in the years to come, when he became medical officer of health of the City of London. In that capacity he had to advise regarding the food supplies of the London population, and he soon became *the* authority on questions concerning food, markets, cold storage, and the like; he was, moreover, always ready to impart knowledge and to give guidance and help to public health colleagues, who went into the City to discuss their difficulties with him; and such help was of special value, for from the first he strove to make the fullest possible use of the opportunities afforded him by the fact that he served an authority concerned with the greatest markets and the largest cold storage enterprises in the world. . . . As President of the Society of Medical Officers of Health he won golden opinions from all, by his courtesy, kindness, impartiality, straightforwardness, and spirit of comradeship. It fell to my lot in April, 1923, speaking on behalf of the Metropolitan Branch, to ask the president of the Society, Dr. T. Eustace Hill, to accept a portrait of Dr. W. J. Howarth, to be added to the gallery of portraits of past presidents. I remember well how the kindliness and consideration I had invariably experienced at his hands prompted me to apply to him one of the few Latin quotations at my command, and to say that Dr. Howarth's faithful study of honourable arts had beautified his character and made him incapable of any harshness of manner. I recollect, too, that an authority on poetry, and on Latin poetry too, who happened to be present on the occasion, assured me that the quotation was most appropriate. . . . Dr. Howarth and I began our work as medical officers of the City Corporation and of the London County Council respectively in the same year, 1912, and naturally and inevitably followed the tradition of close coöperation which had been firmly established by William Collingridge and Shirley Murphy. Throughout the years of our service we travelled westwards, as Carlyle has it in his 'Life of John Sterling,' 'except in opinion not disagreeing'; though, indeed, even in opinion there was not, so far as I know, upon any matter of importance a pin to choose between us. In committee work and at conferences of medical officers of health and other gatherings, Dr. Howarth had ever in mind the interests which his great predecessor Sir John Simon spoke of as those, of the millions of population under the ravages of infectious disease, who were themselves only dimly conscious of having any interests. By-laws, General Powers Acts, tuberculosis schemes, whatever the question chanced to be, Dr. Howarth was always ready to lend a hand and do anything in his power to bring about improvement in the health of London as a whole; always having the grace to use his powers 'as ever in the great Taskmaster's eye.'"

Dr. W. G. Willoughby writes: "In William James Howarth the profession has lost a member who was instinct with the dignity of his calling, filled with the principles and practice of medicine and laudably ambitious that no path which might lead to the general welfare as objective be left unexplored. His activities ranged over the subjects ancillary to the public health branch of the profession to which he gave his best years, but especially he was devoted to preventive medicine whether on the practical, ethical, educational, or scientific side. His aim appeared to be a complete grasp of this worthiest of subjects, elusive though it must of necessity be, while at the same time his great powers of administration sought and found expression in many spheres. In chatting with him small but knotty points, one remembers his incisive settling first of the principles on which all detail must depend; the many with whom his activities in the medical societies in which he was associate or some time ruler must have experienced the benefits of his full grasp of a subject whether in laying out a thesis for debate or in constructive criticism."

Dr. Howarth leaves a widow, a son, and a daughter, and general sympathy will be extended to them in their loss. Mrs. Howarth had been a valuable ally in all his undertakings and nursed her husband devotedly through his long illness.

JOHN AYMERS MACDOUGALL, M.D., F.R.C.S.ED.

Dr. John A. MacDougall died on June 12th at Salerno, Midlothian, aged 84 years. He was the son of Dr. George MacDougall, of Galashiels, and was educated at Edinburgh High School and University, where he qualified in 1865, becoming house surgeon in 1866 to Prof. James Spence. Dr. MacDougall practised in Galashiels until 1875, when he took the F.R.C.S. Edin. and proceeded to Carlisle, where he became surgeon to the Cumberland Infirmary while still engaged in general practice. Ten years later his health made it desirable that he should spend the winters abroad, and he decided to settle on the French Riviera. He practised in Cannes for 29 years, became Officer de Santé at Marseilles in 1890, and later acted as consulting surgeon to the Queen Victoria Memorial Hospital at Nice. In 1914 he retired from active work and returned to Scotland. Dr. MacDougall was a keen and efficient surgeon and a good diagnostician. His services were in demand all over the Riviera, and he inspired not only confidence but friendship in his patients.

Dr. A. Logan Turner writes of him: "John MacDougall possessed in an exceptional degree the clinical instinct. He was an accurate observer and he seldom made a mistake in diagnosis. 'Doing justly, loving mercy, and walking humbly,' he was a man greatly respected by the friends whom he attracted by his integrity of character, his great personal charm, and his obvious sincerity. During his retirement the periodic visits paid to him by his old associates were always a source of gratification to him. Gifted with an excellent and accurate memory he delighted in recalling the events of bygone days, and his reminiscences of the Edinburgh Medical School of 50 years ago were always interesting and instructive. As a dresser he came into close touch with James Syme, for whom he retained throughout his life a profound admiration, and whose teaching and practice of surgery he closely followed in after years. Joseph Lister during this period was working in Glasgow, and although he did not publish until 1867 his first series of cases of compound fracture treated by the new method based on the 'Germ theory' of Pasteur, rumours of his work were already filtering through to Edinburgh. To the end of his life MacDougall kept himself abreast of the modern developments in medicine and surgery, and, just prior to his death, had begun to prepare for publication his recollections of James Syme."

Dr. MacDougall leaves a widow and daughters.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

The following appointments have been notified: Surg. Cmdrs. G. H. Hayes to *Barham* (on recommg.); G. Carlisle to *Victory*, for R.N. Hospl., Haslar; H. F. Briggs to *Kent*, on commg.; and D. H. C. Given to *Tamar*, for Singapore Naval Base, as medical officer in charge of medical organisation and as Naval Health Officer.

Surg. Lts. C. H. Egan to *Barham*; J. Hamilton to *Kent*, on commg.; E. T. S. Rudd to *Victory*, for R.N. Barracks, Portsmouth, temp.; W. P. E. McIntyre to *Vivid*, for Plymouth Hospl.; and W. G. C. Fitzpatrick to *Bee*; A. E. Phillips to *Titania* (on relief); W. W. Darley to *Emperor of India*; and T. L. J. Barry to *Magnolia*.

ROYAL ARMY MEDICAL CORPS.

ARMY DENTAL CORPS.

Temp. Capt. W. Wormington, Dental Surg., Gen. List, to be Capt.

Temp. Lt. S. D. Badman, Dental Surg., Gen. List, to be Lt.

The undermentioned to be Lts. on prob.: J. A. O'Connor, R. Wall, H. L. Foulkes-Roberts, and H. S. Golding.

SUPPLEMENTARY RESERVE OF OFFICERS.

Lt. F. W. Oldershaw to be Capt.

TERRITORIAL ARMY.

Capt. J. D. M. Cardell resigns his commn.

Lt. D. T. McDonald (late Northumberland Fus.) to be Lt.

Lt. H. Miller to be Capt.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. A. F. G. Guinness, from the Active List, to be Capt.

Lt. J. W. Murdoch, from Active List, to be Lt.

General Hospitals: Maj. T. H. W. Alexander having attained the age limit relinquishes his commn, and retains his rank.

ROYAL AIR FORCE.

Ft. Lt. J. A. Perdrau relinquishes his temporary commission on completion of service and is permitted to retain his rank.

Temp. Capt. A. H. Mills (Dental Surgeon, General List) is granted a temporary commission as a Flight Lt. on attachment to the R.A.F.

Temp. Lt. H. D. Humphreys (Dental Surgeon, General List) is granted a temporary commission as a Flying Officer on attachment to the R.A.F.

INDIAN MEDICAL SERVICE.

Amar Nath Malhotra to be Temp. Lt.

Parliamentary Intelligence.

HOUSE OF LORDS.

THURSDAY, JUNE 14TH.

National Insurance Bill.

THE National Health Insurance Bill passed through Committee without amendment.

MONDAY, JUNE 18TH.

Government and the Deaf and Dumb.

Lord CHARNWOOD called attention to the position in industry of the congenitally deaf and dumb and of those who were wholly or partially deafened in later life by disease or accident, and to the limitations of the present provision made for their training and for securing employment for them; and asked His Majesty's Government whether they would (by means of an Inter-Departmental Committee or otherwise) inquire into the whole matter.

Viscount GAGE, replying for the Ministry of Health, said that before the Ministry came into existence a great deal of the work on behalf of the deaf and dumb was done by voluntary associations whose work was still being continued, and the Minister had no intention of interfering with their magnificent work. If they were going to apply the analogy of the machinery set up to deal with the blind to all congenital afflictions, the Ministry would have a great financial load placed upon them. The information of the Board of Education went to show that deaf children who had attended special schools provided by the Board up to the age of 16 were able to obtain and retain reasonably good and remunerative employment.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 13TH.

R.A.M.C. Quartermasters as Pharmacists.

Sir WILFRID SUGDEN asked the Secretary of State for War how many quartermasters of the Royal Army Medical Corps (Territorial Army) possess the qualification of pharmacist; and whether offers from qualified pharmacists of their services in this capacity would be considered by the Army medical authorities.—Mr. DUFF-COOPER replied: None of the quartermasters at present in the Royal Army Medical Corps (Territorial Army) possesses the qualification of pharmacist. If a qualified pharmacist were recommended for appointment as quartermaster his claim would gladly be considered by the War Office. But at present there are no vacancies for such appointments.

Dispensers in the Territorial Army.

Sir WILFRID SUGDEN asked the Secretary of State for War how many dispensers in the Territorial Army held the qualification of pharmacist, and what advantage such dispensers enjoyed as regards rank over dispensers not possessing the qualification of pharmacist.—Mr. DUFF-COOPER replied: None, sir.

Tuberculosis among Members of Defence Forces.

Dr. VERNON DAVIES asked the Prime Minister what steps, if any, were being taken to examine into the question of the attributability of pulmonary tuberculosis in the defence forces to the conditions of service.—Mr. BALDWIN replied: Investigations are being made by a Committee composed of medical members of the Service departments, whose recommendations on the subject have not yet been received.

Medical Cost Accounts for Defence Forces.

Dr. VERNON DAVIES asked the Prime Minister what steps, if any, were being taken to establish a common system of costing for the medical services of the Army, Navy, and Air Force, respectively, particularly with regard to hospitals. —Mr. A. M. SAMUEL, Financial Secretary to the Treasury, replied: Cost accounts, in a common form, have been compiled for a period of three months at one Naval, one Military, and one Air Force hospital. Those accounts have been under the consideration of the Joint Medical Services Committee of the three departments. But it has not yet been decided what modifications would require to be made in the common form before it would be suitable for general adoption.

Medical Examination of Emigrants to Canada.

Mr. HASLAM asked the Secretary of State for Dominion Affairs if he could now give the number of persons rejected by the Canadian doctors as unfit for emigration to Canada from Jan. 1st to April 30th, and the number of persons who, though requested to present themselves for medical examination, gave distance, inconvenience, or expense as a reason for their inability to attend; and whether he had any evidence that these examinations were hindering emigration.—Mr. AMERY replied: The number of persons rejected by the Canadian Government doctors between Jan. 1st and April 30th was 1740. There is no record of the numbers who gave distance, inconvenience, or expense as a reason for their inability to attend. I am not prepared at present to express any opinion as to how far the new system is hindering the movement from this country, but I invite my hon. friend's attention to the report of the Immigration Committee of the Canadian House of Commons, a telegraphic summary of which appeared in the *Times* of June 8th. That report, whilst making certain recommendations for improving the new system and obviating inconveniences in remote districts, does not admit that the new system has reduced the volume of British immigration into Canada.

THURSDAY, JUNE 14TH.

Hospital Officers in the Prison Service.

Mr. ERNEST BROWN asked the Home Secretary the number of hospital officers, male and female, in the prison service; how many, in each case, were registered by the General Nursing Council as ordinary nurses or as mental nurses; and at what prisons, if any, were hospital principal officers appointed who had not qualified for State registration.—Sir WILLIAM JOYNSON-HICKS replied: There are 130 men hospital officers and 10 women hospital officers in the prison service; of the men 38 are registered by the General Nursing Council as nurses, 9 as mental nurses, and 6 are registered under both heads; none of the women are registered. There are, however, 33 fully trained women nurses employed in the prison service, all of whom are State registered, 31 being on the general register and 2 on the register of mental nurses. At the following prisons the hospital principal officer is not registered:—Men: Birmingham, Brixton, Liverpool, Manchester, Parkhurst, Wandsworth, Wormwood Scrubbs. Women: Liverpool, Manchester, and Portland Borstal Institution.

Dr. Voronoff's Visit to England.

Mr. BRIANT asked the Home Secretary if a permit had been given to Dr. Voronoff to visit this country; if so, for what period was is it available; and if such permit would allow him to carry out experiments of the nature of grafting on human beings.—Sir W. JOYNSON-HICKS replied: Dr. Voronoff was given leave to land in the United Kingdom on May 22nd and no time-limit was imposed. His object was to give certain lectures at Cambridge University and elsewhere, but no licence of any kind has been given him to experiment in this country.

Mr. BRIANT asked if Dr. Voronoff could experiment without a licence? The British public were extremely anxious to know that he should not have an opportunity of conducting dangerous and disgusting operations which included the transfer of the organs of propagation from an ape to a woman.

Sir W. JOYNSON-HICKS: It is quite impossible that he should conduct any experiment involving vivisection or cutting operations on any animal without a licence, and that licence I have not granted and do not propose to grant. (Cheers.)

Lieut.-Colonel FREMANTLE asked if a human being was no an exception, and if he could not offer himself for experimen if he liked?

Mr. RADFORD asked if it would be possible for some othe licensed person to make an operation on an animal an leave it to Dr. Voronoff to complete the experiment on human being. Did the Home Secretary note that it wa a violation of everything that was decent in our constitutio that this man should be allowed to conduct such experi ments in this country?

Sir W. JOYNSON-HICKS: My hon. friend is really no right. No such experiments are conducted in this countr at all, and the suggestion that it will be possible to hav an operator who has a licence will not work, because I an most careful to inquire into the nature of the operation conducted under a licence.

Slum Clearance Schemes.

Mr. DAY asked the Minister of Health how many scheme for the purpose of slum clearance were now in operation i Great Britain; how many of these had been authorised and the number of houses and families, and the total numbe of persons, who would be affected.—Mr. CHAMBERLAI replied: 113 slum clearance schemes, affecting approximatel 14,000 properties, have been confirmed since 1919 in respec of areas in England and Wales. The number of person required to be rehoused under these schemes is 66,968. Th available statistics do not show how many families ar involved. With regard to Scotland, I would suggest tha the hon. Member should address a similar question to m right hon. friend the Secretary of State.

Use of Croton Oil in Mental Hospitals.

Mr. CHARLETON asked the Minister of Health whethe the recommendations made by the Royal Commission o Lunacy and Mental Disorder, 1926, for the control of th use of croton oil, whether for medicinal or punitive purposes in mental institutions were receiving his attention; an whether he proposed to take any administrative or othe action to deal with this matter.—Mr. CHAMBERLAIN replied The recommendation of the Royal Commission has receive consideration, but the report does not support the suggestio made in the question that the drug is used for punitiv purposes. The administration of drugs of this character i the subject of frequent consultation between the Medica Commissioners of the Board of Control and the medica officers of mental hospitals, and I am advised that no furthe action is at present necessary.

Contributory Pensions and Mentally Deficient Children.

Mr. LAWSON asked the Minister of Health if he wa aware that the mother of a child who had reached 14 year of age was deprived of its allowance under the Widows Orphans', and Old Age Contributory Pensions Act althoug the child had been for some years excluded from schoo owing to its mental condition; and whether he was prepare to amend the Act so that a child who was medically certifie as mentally deficient could continue to receive the benefi of the allowance beyond the age of 14 years.—Mr CHAMBERLAIN replied: The answer to the first part of th question is in the affirmative. As regards the second part I would point out that an amendment which would hav secured what is now proposed was negatived when the Bi was in Committee, and I remain of the opinion that it woul not be appropriate to make specific provision for thi exceptional class in the contributory pensions scheme.

Sulphur Dioxide in the Milling of Barley.

Mr. WESTWOOD asked the Parliamentary Secretary t the Ministry of Health if he had received a communicatio from Messrs. James Proctor and Sons, Limited, barley millers, Liverpool, offering documentary evidence that th Ministry of Health (Food Preservatives) Regulations, i their application to the use of sulphur dioxide in th bleaching and preserving of barley, had completely stoppe their trade, and that their previous buyers had placed thei orders with foreign firms; and if he was aware that regula tions prohibiting the use of sulphur dioxide in the milling o barley were at one time enforced in Germany and America and in both countries had been withdrawn because of thei impracticability; and would he be prepared to meet deputation of millers to discuss the effects of these regula tions on the barley milling trade in England and Scotland.— Mr. CHAMBERLAIN replied: I have received the communica tion referred to in the first part of the question. I am awar that the use of sulphur dioxide in the milling of barley i at present permitted in Germany and the United States o America, but I have no information to show that th prohibition of its use in those countries was attempted an abandoned because it is impracticable. The fact tha exporters of barley to this country are able to comply wit our regulations scarcely bears out that suggestion. A regards the last part of the question I would remind th

hon. Member that two deputations from the barley trade have already been received and that full consideration has been given to their representations. I do not think that any useful purpose would be served by the reception of a third deputation.

Poison Gas and Bacteria in Warfare.

Sir ROBERT HUTCHISON asked the Prime Minister whether, in view of the recommendation of the League of Nations Disarmament Commission that all subsidies, both to private and official laboratories promoting research in poison gases, should be abolished, he could say which nations had adopted these recommendations; what action the British Government had taken; whether any subsidies were now being paid to manufacturers of poison gases and bacteria; and, if so, to whom these subsidies were being paid and the amount in each case.—Mr. BALDWIN replied: Certain classes in regard to chemical warfare were included in the text of the Draft Convention drawn up by the Preparatory Commission for the Disarmament Conference at its third session, but they have not yet come forward for discussion on the Preparatory Commission. The answer to the third part of the question is in the negative.

Washington Hours Convention.

Mr. RILEY asked the Minister of Labour the names of the countries which had already unconditionally ratified the Washington Hours Convention and the names of the countries which had decided to ratify conditionally on ratification by Great Britain and certain other countries.—Sir ARTHUR STEEL-MAITLAND replied: According to my information Belgium, Bulgaria, Chile, Czecho-Slovakia, Greece, India, Luxembourg, and Roumania have ratified the Washington Hours Convention unconditionally, and Austria, France, Italy, and Latvia conditionally on ratification by Great Britain and other countries.

Deaths of Women in Childbirth.

Mr. TASKER asked the Minister of Health the percentage of deaths of mothers at childbirth where doctors attended the birth of children with uncertificated midwives in attendance; and what was the percentage of deaths of mothers at childbirth when attended by certificated midwives only.—Mr. CHAMBERLAIN replied: No complete statistics are available on these points. As regards the last part of the question I may refer the hon. Member to p. 42 of the recent report issued by my department on the "Protection of Motherhood," on which is a summary of the results of an analysis of the midwifery work of the Queen Victoria Jubilee Institute over a period of years.

Treatment of Pensioners with Chronic Disabilities.

Mr. DUCKWORTH asked the Minister of Pensions whether, seeing that many ex-Service pensioners suffering from chronic disabilities were now being referred to national health insurance for treatment, he would reconsider this decision and grant institutional treatment and allowances, in view of the hardships suffered by such pensioners.—Major TRYON replied: It is the duty of the proper medical officers of the Ministry to prescribe whatever form of treatment they may consider necessary, and in a case where no special treatment beyond attention from a general practitioner is required, the pensioner is advised to consult the practitioner whose services are available to him under the Health Insurance Acts. This is the long-standing practice of the Ministry, and I should not be justified in requiring, as the hon. Member suggests, the provision of hospital treatment in all cases regardless of medical views as to whether such treatment is necessary or not.

Board of Survey and Naval Invaliding Cases.

Mr. HORE-BELISHA asked the First Lord of the Admiralty in how many cases in the last 12 months the Board of Admiralty had overruled the recommendations of the Board of Survey in invaliding cases, and in how many cases had they overruled the decision of the commander-in-chief.—Lieut.-Colonel HEADLAM, Parliamentary Secretary to the Admiralty, replied: In 52 cases of invalidings during the year ended Dec. 31st, 1927, the opinion of the Board of Survey that the cause of invaliding was not attributable has been overruled. In no case was an award of attributability altered. No special recommendations were made by commanders-in-chief.

MONDAY, JUNE 18TH.

Medical Inspections of Emigrants to Canada.

Sir ROBERT THOMAS asked the Secretary of State for Dominion Affairs whether he was aware that there were widespread complaints, both here and in Canada, that the new system of medical inspection had antagonised the British medical profession and created an atmosphere unfavourable to emigration to Canada; and whether he would discuss this with the Dominion Government.—Mr. AMERY replied: I have seen press statements of the kind to which the hon. member refers, but I am not prepared, at present, to express any opinion as to the effect of the new system of medical inspection on the movement from this country. From the latest information in the press I gather that it is proposed materially to modify the new system.

Medical Inspection of Casual Paupers.

Mr. SHEPHERD asked the Minister of Health whether he would instruct boards of guardians to arrange for the medical inspection of casuals to be carried out in the evening before the risk of infection of clothes and bedding had been incurred, and also in order that men might be released early in the morning, and thus be given time to search for employment en route for the next casual ward.—Mr. CHAMBERLAIN replied: I am afraid that the varying conditions of staff and accommodation in the different casual wards, and the late hour of arrival of some casuals, make it impracticable to arrange that effect should be given to the hon. Member's suggestion.

Houses in Unhealthy Areas.

Viscountess ASTOR asked the Minister of Health the total number of houses demolished in unhealthy areas under improvement schemes since 1919; the number of persons displaced by reason of such clearances and since re-housed in new dwellings, and the number of improvement schemes completed.—Sir KINGSLEY WOOD replied: Up to March 31st last, the latest date for which figures are available, the number of properties demolished in pursuance of slum clearance schemes, confirmed since 1919 in respect of areas in England and Wales, was 4,841, out of 13,494 properties included in such schemes. Information as to the number of persons so far displaced by reason of these schemes is not available, but it is a requirement of the schemes that re-housing accommodation shall be provided for 65,180 persons. Up to March 31st last, 6164 new dwellings had been completed for this purpose, and a further number were in course of erection. Fifteen schemes have been fully completed and others are nearing completion.

Expenditure on Out-Relief.

Mr. THOMAS GRIFFITHS asked the Minister of Health the expenditure in England and Wales in 1926–27 and 1927–28 respectively, on out-relief to children boarded out, to persons ordinarily employed, and on other out-relief, in continuation of the 1925–26 figures for these items shown in Table 7 of the Annual Taxation Returns, Part I., 1925–26.—Sir KINGSLEY WOOD replied: The following is the information asked for: The expenditure by poor-law authorities in England and Wales in the financial year 1926–27 on out-relief to children boarded out was £251,432; to persons ordinarily employed and their dependents £15,001,350, and on other out-relief £8,661,227. The annual returns for the year 1927–28 have not yet been received, but the approximate amount spent on out-relief in that year to persons ordinarily employed (and their dependents) was £6,920,000, and on all other out-relief £8,163,000.

TUESDAY, JUNE 19TH.

Cost of Tuberculosis Treatment.

Mr. OLIVER asked the Minister of Health whether he could give the total annual cost to the nation of tuberculosis for the past four years, taken separately, and the amount of money expended during the same periods on the disposal or reclamation of slum areas.—Captain MARGESSON replied: The total expenditure in England and Wales on the carrying out of the approved schemes for the treatment of tuberculosis during each of the last four years for which figures are at present available, excluding capital expenditure, was as follows:—

Year ended March 31st—	£		£
1924	2,884,062	1926	3,157,694
1925	3,034,600	1927	3,294,991

I regret that similar information as regards slum clearance schemes is not at present available. Of the total estimated capital expenditure of £8,546,000 to be incurred on schemes which have been approved in recent years, it is estimated that about £4,551,000 has been expended to date.

QUEEN'S HOSPITAL FOR CHILDREN.—At a dinner at the Mansion House last week in support of the appeal for £100,000 for the extension of this hospital in the Hackney-road, the Duke of York, the President, pointed out that the institution deals with a larger number of cases than any other children's hospital in the kingdom. When the enlargements were originally proposed, on the eve of the war, the average annual attendance of children exceeded 80,000; it is now 147,000.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A meeting of the Council of the Royal College of Surgeons was held on June 14th, Sir Berkeley Moynihan, the President, in the chair. The following examiners were elected for the under-mentioned examinations :—

Primary Fellowship.—(Anatomy) Mr. P. N. B. Odgers.
First Conjoint.—(Anatomy) Prof. William Wright and Mr. R. Bramble Green ; (Physiology) Prof. E. B. Verney.
Dental Surgery.—Mr. A. T. Pitts and Mr. E. B. Dowsett (re-elected for a period of five years).

As the result of the Final Fellowship Examination for the Fellowship, held from May 17th to 31st, for which 115 candidates presented themselves, 34 candidates (32 men and 2 women) were approved. The following are the names and medical schools of the successful candidates upon whom the Council conferred the diploma of Fellow :—

A. J. W. Ahern, Melbourne and Guy's ; F. G. Allan, St. Thomas's ; J. C. Anderson, St. Andrew's and Sheffield ; L. H. Ball, Melbourne and Guy's ; J. Brumwell, Durham ; J. Carver, Cork and London ; A. M. Chaudhuri, Calcutta and St. Bart.'s ; F. M. Collins, King's Coll., Cambridge, and St. Bart.'s ; J. Elgood, St. Bart.'s ; D. M. B. Evans, Cardiff and Charing Cross ; C. W. Flemming, Oxford and Univ. Coll. ; W. R. Forster, Melbourne and St. Bart.'s ; A. C. Gairdner, Oxford and London ; J. Gray, Cambridge and Guy's ; W. A. Gray, Edinburgh, London, and Charing Cross ; P. Hack, Guy's ; A. F. Hobbs, Adelaide and London ; A. Hobson, Birmingham ; E. Holmes, Leeds ; G. H. Howells, St. Thomas's ; H. Jackson, Middlesex ; J. A. James, Bristol, Guy's, and London ; T. G. I. James, Cardiff and Guy's ; L. C. Lancaster, Cambridge and St. George's ; L. E. Le Souef, Melbourne and London ; A. C. MacLeod, Middlesex ; Gladys Helen Marchant, Calcutta and Royal Free ; M. G. Nimatallah, Cairo and London ; D. W. C. Northfield, Guy's ; Constance Mary Ottley, Oxford and London ; S. M. Power, London ; B. G. Scholefield, Oxford and Guy's ; J. H. Thompson, Univ. Coll. ; and J. H. M. Walker, Univ. Coll.

The diploma of Fellow was also conferred upon three candidates who have previously passed the examination and have now attained the required age of 25 years :—

James Gore, Birmingham and London ; R. L. Holt, Manchester ; and F. T. Ridley, Birmingham.

The diploma of Member was conferred upon the following who have passed the requisite examinations and have now complied with the by-laws :—

D. W. Currie, Leeds ; Yetta Gimpelson, Royal Free and St. Mary's ; Bhavani Natarajan, Bombay ; Margaret E. Peaker, King's Coll. ; Edith J. L. Smith, Royal Free ; G. N. Unnithan, Madras and Univ. Coll. ; and Elsie E. Wright, Royal Free and St. Mary's.

At the Primary Examination for the Fellowship, just completed, 160 candidates presented themselves, of whom 50 were approved. The following are the names and medical schools of the successful candidates :—

R. L. Almond, Melbourne ; M. I. Ashmawi, Cairo and St. Mary's ; M. Backwell, Leeds and Middlesex ; J. S. Batchelor, New Zealand and Guy's ; W. D. Bedford, Leeds ; H. S. Billcliff, New Zealand, St. Mary's, and Middlesex ; J. D. H. Bird, King's Coll. ; D. A. S. Blair, Cambridge and St. Thomas's ; H. A. Brittain, Dublin and Middlesex ; R. C. Brock, Guy's ; T. E. Cawthorne, King's Coll. ; H. L. Cleave, Bristol and Middlesex ; J. H. Cramsie, Sydney and Middlesex ; J. Dawson, Glasgow, St. Mary's, and London ; D. N. Eppstein, New Zealand ; R. H. Fish, Cambridge and St. Thomas's ; R. L. Flett, New Zealand and Middlesex ; J. F. E. Gillam, St. Thomas's and Middlesex ; Augusta G. Harrison, King's Coll. ; E. S. Harverson, Univ. Coll. ; H. P. Himsworth, Univ. Coll. ; M. B. Lavery, Belfast and Sheffield ; E. S. Lee, King's Coll. ; R. O. Lee, Cambridge and St. Thomas's ; W. Leslie, Guy's ; A. C. Lysaght, Bristol and Guy's ; R. G. Maliphant, Univ. Coll. and King's Coll. ; A. J. Mason, Otago, Middlesex, and St. Mary's ; M. V. Modi, Bombay and London ; H. S. Morton, Dalhousie and London ; A. R. Mowlem, Otago, St. Mary's, and Middlesex ; J. H. Mulligan, Aberdeen ; G. H. Newns, King's Coll. ; C. W. Olsen, Michigan and St. Bart.'s ; M. D. Patel, Bombay, London, and King's Coll. ; J. B. Pennybacker, Tennessee and Edinburgh ; P. N. Ray, Calcutta and St. Bart.'s ; J. G. Reid, Oxford and St. George's ; A. H. Richardson, Birmingham ; N. H. L. Ridley, Cambridge, St. Mary's, and St. Thomas's ; M. C. Rous, Cape and London ; A. Simpson-Smith, Cambridge and Guy's ; G. J. Sophian, St. Bart.'s and London ; V. Srinivasan, Madras and Middlesex ; F. S. Tait, Birmingham and Middlesex ; H. S. Thomas, Melbourne and Middlesex ; T. F. Todd, Guy's ; C. K. Vartan, St. Bart.'s ; A. L. Webb, Adelaide, Middlesex, and London ; and T. H. Wilson, St. Thomas's.

MILLION BEQUEST TO HOSPITAL.—The late Mrs. Mary Anne Fitzgerald, widow of a wealthy Englishman, has bequeathed £1,000,000 to St. Luke's Hospital, New York, for the construction of a new hospital overlooking the Hudson, as a memorial to Eli White, Mrs. Fitzgerald's father.

SOCIETY FOR THE STUDY OF INEBRIETY.—At a meeting to be held at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, July 10th, at 4 P.M., Dr. H. M. Vernon will open a discussion on the Scientific Control of Alcoholism.

LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—The prizes and certificates will be given away by Dr. Arthur Phear, at 8, Hunter-street, W.C., on Thursday, June 28th, at 4 P.M. Sir Francis Acland will unveil a Memorial Porch which has been erected in the north-east of the quadrangle.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty, held on June 4th, the following were admitted (after examination) as Fellows : Dr. John Craw, Whitehaven ; Dr. Suryakant Bhanshankar Trivedi, India ; and Dr. Andrew Morton Young, Taranaki, New Zealand.

CENTRAL ASSOCIATION FOR MENTAL WELFARE.—This Association, whose address is 24, Buckingham Palace-road, S.W., has arranged a course for persons engaged in the training of mental defectives, to be held in London from Sept. 8th to 29th. A syllabus, together with forms of application, may be had from the hon. secretary.

THE Minister of Health has appointed Lord Blanesburgh to be chairman of the Advisory Committee on the Welfare of the Blind, in succession to the late Mr. G. H. Roberts. The Committee advises the Minister on matters relating to the care and supervision of the blind, including any question that may be specially referred to them by the Minister.

ROYAL SANITARY INSTITUTE.—The annual congress and health exhibition will be held at Plymouth from July 16th to 21st, under the presidency of Viscount Astor.—A complimentary dinner to the retiring secretary, Mr. White Wallis, who has held office for nearly 48 years, is to be held at the Café Royal, Regent-street, London, on June 27th, at 7.15 for 7.30 P.M.

IMMUNISATION AGAINST DIPHTHERIA.—After considerable debate the Manchester City Council, on June 6th, decided by a large majority to promote a scheme for providing voluntary immunisation against diphtheria in Manchester Schools. Although the case-mortality has fallen, the incidence of the disease continues to increase, and about 70 deaths occur annually in Manchester from this disease. The public health committee's scheme involves the provision of toxoid-antitoxin gratis for six months to medical officers of the public health services and to private practitioners.

AUSTRIAN SPAS.—The Austrian State Publishing Office (Österreichische Staatsdruckerei), Wein I., Seilerstrasse 24, has published in the German language a reference book on "Austrian Spas," which is obtainable direct, or through any bookseller. The information contains much information of value to doctors concerning the various spas, the composition of their mineral waters and their therapeutical effects. The book has been compiled by well-known Austrian authorities, such as the University Professor, Dr. Viktor Conrad, Dr. Karl Diem, Ing. Dr. Josef Knett, Prof. Dr. Hans Horst Meyer, and Dr. Siegfried Stockmayer.

ADDRESS TO PROF. SYDNEY YOUNG.—On June 15th, at Trinity College, Dublin, an address signed by some 200 chemists in many parts of the world was presented to Prof. Sydney Young, F.R.S., who is retiring from the chair of chemistry in the University of Dublin, which he has held since 1903. Mr. W. F. Adeney, Prof. E. A. Werner, and Prof. F. E. Hackett spoke of Prof. Young's discoveries in the chemistry of distillation and of the accuracy of all his work. Mr. E. S. Gwynn, Provost of Trinity College, spoke enthusiastically of his work as a teacher in the College for the last 25 years, and Prof. Young expressed his appreciation of the honour paid to him, wishing his successor as much happiness in Trinity College as he had had himself.

WELSH BOARD OF HEALTH.—The Minister of Health has approved the following arrangements for the organisation and conduct of the work of the Board, which will henceforth consist of three members—Mr. John Rowland, Dr. Llewellyn Williams, Mr. Howell E. James. Mr. Rowland and Dr. Llewellyn Williams will continue to exercise the functions heretofore assigned to them as Deputy Controller of Insurance and Medical Member of the Board respectively. Mr. Rowland will preside at Board meetings, and will succeed Sir Thomas Hughes as Deputy for the Welsh member of the National Health Insurance Joint Committee. Mr. Howell James will become a member of the Board, and will cease to be secretary and ex-officio member of the Board.

The Gold Medal for the best candidate for entry as Dental Officer in the Royal Navy has been awarded to Surg.-Lieutenant D. W. Holgate.

THE Oxford University Press will shortly publish an English translation, with the author's latest additions, of Dr. v. Economo's "Cellular Structure of the Cerebral Cortex," the French edition of which we reviewed last week (p. 1230).

KING'S COLLEGE HOSPITAL.—In opening the annual fête at this hospital last week the Duchess of Portland said that it had been decided to take an additional house for the accommodation of nurses and to use an empty ward for child patients.

IRISH MEDICAL ASSOCIATION.—The annual meeting of this Association was held at Dublin on June 13th, the President, Dr. H. T. Warnock, in the chair. The annual report stated that on Dec. 31st, 1927, there was a membership of 390. There was a satisfactory balance in hand, but outstanding arrears amounted to over £900. The council for 1928–29 consists of the President (Dr. Warnock), the Vice-President (Mr. P. E. Hayden), and 26 representatives.

ROYAL MEDICAL BENEVOLENT FUND OF IRELAND.—The annual meeting of this Fund was held at Dublin on June 13th, with Mr. R. A. Stoney in the chair. It was reported that the number of grants made during the year had risen from 81 to 90, the amount disbursed in grants being £2071. The committee draws attention to the inadequacy of its funds to meet the demands made on it. It is stated that there are many widows and orphans of medical men living in penury and even hunger, and that infirm medical men lack the minor comforts which would ameliorate their lot.

NATIONAL BABY WEEK COUNCIL.—National Baby Week will be celebrated this year from July 1st–7th. The Council urges that special attention should be given to the problem of immunisation, the prevention of maternal mortality, and new developments in maternity and child welfare work. A conference is being organised by the National Association for the Prevention of Infant Mortality on July 4th, 5th, and 6th, and will be followed by an International Child Welfare Congress in Paris on July 8th–12th (see p. 1311). Information about the conference and congress may be had from Miss J. Halford, hon. secretary, National Association for the Prevention of Infant Mortality, 117, Piccadilly, London, W. 1.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—The annual meeting of this society was held on June 13th at Victory House, Leicester-square, London, W.C., Sir John Rose Bradford presiding. In proposing the adoption of the annual report and balance sheet the chairman said that it was unnecessary to refer in detail to the successful work of the Society during the year as it was fully described in documents which had been circulated. The report contained many matters of considerable interest to the medical profession, while one of the features gratifying to the Committee was the very large number of new members, the largest in any individual year; "but," said the speaker, "when it was considered what a large number of the members of the medical profession did not belong to either of the two medical defence societies the condition of things could not yet be considered satisfactory." The work of the Society had greatly increased in the past few years, for there seemed to be an extraordinary fondness at present on the part of the public for the bringing of actions against medical men. In this connexion the speaker particularly emphasised the necessity of full use being made of X ray examinations as a protection against a large number of litigious claims. Notwithstanding the increased expenditure which the Society had incurred in recent years the total assets were only £1,000 less approximately than previously, while the financial reserves had accumulated to a very satisfactory total. New arrangements had been made with regard to insurance for damages that might be incurred, and these would decrease the expenses of the Society in future years. From the points of view alike of numbers, amount of work done, and the success in performing that work, there could be no question about the Society being in a very flourishing state, while the financial position was also satisfactory. In the course of his address Sir John Rose Bradford expressed the gratitude of the Society to its officials and solicitors for the competent way in which the increased demands upon them had been met. On the motion of Dr. C. M. Fegen the President was re-elected for the ensuing year, the proposer referring to the untiring work of Sir John Rose Bradford on behalf of the Society; all the officers were re-elected, including the auditors, Messrs. Allwork and Co., and the solicitors, Messrs. Le Brasseur and Oakley, were thanked for their conduct of the Society's business. A vote of thanks to the chairman terminated the proceedings.

Dr. Charles Gordon Moore has been appointed Physician in Ordinary to H.R.H. Princess Beatrice in the place of Sir Alfred Rice-Oxley, C.B.E., who has resigned.

STREET ACCIDENTS IN LONDON.—During the months of January, February, and March last in the Metropolitan Police area, the street accidents averaged over 284 a day, and each day three lives were lost. The total of deaths during these three months was 293, as compared with 214 in the corresponding months of last year.

WORLD'S DAIRY CONGRESS.—As we have already announced, the eighth World's Dairy Congress will open at the Central Hall, Westminster, on June 26th. The congress has never before been held in England, and more than 1000 delegates from 47 different countries will attend. Among those who are reading papers are Prof. E. V. McCollum, of Johns Hopkins University, Prof. J. C. Drummond, Dr. H. Corry Mann, Sir John Robertson, and Prof. H. R. Kenwood.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS.—On June 12th the Duke of Connaught, who has been President of the hospital since 1872, formally opened the new block which is to house the surgical and radiological departments. Sir Alexander Butterworth, chairman of the committee of management, said that the policy of the hospital had been to keep the buildings and equipment up to the standard of modern requirements rather than to incur the cost of providing new beds. With this end in view, the Prudential Assurance Company a year ago had generously given new pathological laboratories and a research institute. Now numerous friends and well-wishers of the hospital had subscribed the funds necessary for a new surgical and radiological block. Lack of funds had prevented the committee from embarking years ago upon these much needed improvements. Sir Ernest Birch spoke of the keen interest which was taken by the Royal Family in all voluntary hospital work. The Duke of Connaught pointed out the great changes which had taken place in the treatment of chest diseases since he became President of the hospital; diseases of the heart and lungs were still responsible for approximately half the deaths and much of the ill-health of this country. Within a comparatively short term of years the surgical treatment of pulmonary diseases had attained a position of great importance. The extent to which the use of X rays for diagnostic purposes had grown could be realised from the fact that the radiological department provided 12 years ago had already proved inadequate. The hospital was now furnished with suitable surgical and radiological equipment.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

THURSDAY, June 28th.—2 P.M., UROLOGY. Operations at St. Peter's Hospital. 8.30 P.M. (at 1, Wimpole-street), Prof. Jurasz (Poznan): Paper on Movable Kidney, to be followed by a discussion.

FRIDAY.—11–12 A.M., UROLOGY. Demonstration of special instruments at 1, Wimpole-street. 2 P.M., Operations at St. Thomas's Hospital. 8 for 8.30 P.M., President's Dinner at Verrey's Restaurant.

SATURDAY.—DISEASE IN CHILDREN. Provincial Meeting at the Royal Infirmary, Leicester. 2 P.M. (in the Board Room), *Paper:* Dr. H. Stanley Banks, Senior Medical Officer, Leicester City Isolation Hospital: On the Treatment of Toxic Diphtheria by Large Intravenous Doses of Antitoxin. 2.30 P.M., *Paper:* Mr. C. J. Bond: On the Effect of Certain Radiated Sterols on the Cellular Constituents of the Blood. 3.15 P.M., *Paper:* Dr. G. Brittain Gill, Physician to Braceborough Spa: On Calcium Deficiency and its Treatment. 3.30 P.M. (in Out-patients' Dept.), *Cases:* Dr. Astley Clarke: (1) Resolving Luetic Ascites. (2) Photographs of Apparatus for the Treatment of Acute Anterior Poliomyelitis Involving all Four Limbs. Mr. R. S. Lawson: (1) Raynaud's Disease. (2) and (3) Two Cases of Osteogenesis Imperfecta. (4) Calcaneous Deformity Showing Calcaneous Spring. (5) Anterior Poliomyelitis of Upper Arm, Showing "Shelf" Splint. Dr. J. P. Jamie: Three cases. Dr. A. E. Payne: Radiograms of Kohler's disease. Dr. J. V. C. Braithwaite: (1) and (2) Two Cases of Cœliac Rickets. (3) Lipodystrophia. (4) Hypertelorism. (5) Myositis Ossificans Progressiva. (6) Infantilism with Hypertrichosis. (7) Osteogenesis Imperfecta. 4.30 P.M., Tea in the Hon. Staff Room. 5 P.M., Discussion.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY
49, Leicester-square, W.C.
WEDNESDAY, June 27th.—4.15 P.M., Annual General Meeting, followed by an ordinary meeting. Clinical Cases.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

INSTITUTE of HYGIENE, 28, Portland-place, W.
FRIDAY, June 29th.—3.30 P.M., Dr. C. S. Thomson: A Review of Food Legislation.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 25th, to SATURDAY, June 30th.—ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, Great Portland-street, W. Special clinical demonstration in Surgery by Mr. Rocyn-Jones. In Out-patients' Department at 2.30 P.M. No fee.—ROYAL EYE HOSPITAL, St. George's Circus, S.E. Special clinical demonstration in Ophthalmology by Mr. Bickerton at 3 P.M., on Wed. No fee.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, W. Special course of lectures and clinical demonstrations upon selected cases for four weeks, 5 P.M. daily.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Practitioners' course in Medicine, Surgery, and the Special Departments, 4.30 to 6 P.M. daily (second week). Further particulars from the Secretary (Mayfair 2236).

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, June 25th.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: The Diagnosis of Cerebral Tumours (2).
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Bailey.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Chorea.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, June 26th.—3.15 P.M., Dr. B. E. Schlesinger: Rheumatic Heart Disease in Children.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.
WEDNESDAY, June 27th.—3.15 P.M., Demonstration by Dr. T. A. Ross at the Central Hospital for Functional Nervous Disorders, Penshurst, Kent.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, June 25th.—2.30 to 5 P.M. Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.
On Tuesday, at 2.15 P.M., there will be a demonstration of Medical Cases by Dr. F. G. Crookshank.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
TUESDAY, June 26th.—3.30 P.M. (at the Jessop Hospital), Mr. Chisholm: Gynæcological Cases.
FRIDAY.—3.30 P.M. (at the Royal Hospital), Mr. Yates: Surgical Cases.

Appointments.

KELLETT, FRANK, M.B., B.Ch. Camb., has been appointed Assistant Pathologist to the Laboratories of Pathology and Public Health, Harley-street, W.
MADILL, J. T. H., M.B., Ch.B. Edin., F.R.F.P.S. Glasg., Medical Superintendent of Garlands Mental Hospital, near Carlisle.
PETERKIN, F. G. T., M.B., Ch.B. Aberd., Certifying Surgeon under the Factory and Workshop Acts for the Kirkwall District of the County of Orkney.
SINCLAIR, W. A., M.B., Ch.B. Edin., a Medical Referee under the Workmen's Compensation Act for the Orkney District.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Hon. Jun. Asst. Ophth. S.
Birmingham University.—Asst. Lecturer in Physiology. Also Asst. Lecturer in Biochemistry. Each £300.
Bombay, Cama and Albless Hospitals.—M.O. Rs.800–50–1000.
Bradford City.—Asst. S.M.O. £600.
Brighton, Sussex Throat and Ear Hospital.—Hon. S.
Burton-on-Trent, General Infirmary.—Sen. Res. H.S. £200.
East London Hospital for Children, &c., Shadwell, E.—Surg. to Nose, Throat, and Ear Dept.
Eastern Dispensary, Leman-street, E.—Physician.
Gloucester, Gloucestershire Royal Infirmary.—Res. Surg. O. At rate of £175.
Hackney and Stoke Newington Tuberculosis Dispensary, Kingsland-road, E.—Clin. Tuberculosis Officer. £750.
Hounslow, Heston and Isleworth Urban District Council.—Half-time Asst. M.O. £350.
Hull, City and County of Kingston-upon-Hull, &c.—Asst. M.O.H. £600.
Hull, Royal Infirmary.—Asst. H.S. At rate of £150. Also Cas. H.S. £130.
Inverness District Asylum.—Jun. Asst. M.O. £250.
Kensington, Fulham, and Chelsea General Hospital, 194, Finborough-road, Earl's Court, S.W.—Jun. Res. M.O. At rate of £100.
Kirkwall, Balfour Hospital.—Supt. Also Surgeon and Consultant to County of Orkney. £600.
Leeds Public Dispensary.—Sen. Res. M.O. £200.
Manchester University.—Reader in Materia Medica and Therapeutics. £800.
National Hospital, Queen-square, W.C.—Hon. Surg. Asst.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Newcastle-upon-Tyne, Hospital for Sick Children.—Hon. Phys.
Norwich, Norfolk and Norwich Hospital.—Hon. Phys.
Plumstead and District Hospital, Plumstead High-street, S.E.—Second Asst. M.O. £350.
Preston, Biddulph Grange Orthopædic Hospital.—Jun. H.S. £150.
Preston and County of Lancaster Royal Infirmary.—H.P. £190. Also H.S. £150.
Princess Louise Kensington Hospital for Children, North Kensington, W.—Hon. Anæsthetist.
Rhondda Urban District Council.—Asst. M.O.H., &c. £600.
Royal Army Medical Corps.—Commissions.
Royal Free Hospital, Gray's Inn-road, W.C.—Jun. Clin. Assts.
Royal Naval Medical Service.—Surg. Lieutenants. £453.
St. Mary Abbots Hospital, Marloes-road, W.—Asst. M.O. £250.
Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100.
Surrey County Council.—Deputy County M.O.H. Also Asst. M.O. £1000 and £600 respectively.
Swansea County Borough.—Asst. Dental S. £450.
University of London.—External Examinerships.
Willesden General Hospital, Harlesden-road, N.W.—Res. H.S. At rate of £100.

The Chief Inspector of Factories announces the following vacancies for Certifying Factory Surgeons: Banchory (Kincardineshire), Stretford (Lancashire), Salford (Lancashire), and Islington (County of London).

Births, Marriages, and Deaths.

BIRTHS.

BEATH.—On June 7th, at Elmwood, University-terrace, Belfast the wife of Dr. R. Maitland Beath, of a daughter.
BUCHANAN.—On June 10th, at a maternity home, Lincoln, the wife of Dr. D. S. Buchanan Navenby, Lincoln, of a daughter.
CURWEN.—On June 17th, at Medina Villas, Hove, the wife of Dr. E. Cecil Curwen, of a daughter.
FORD.—On June 11th, at St. Mary's-street, Stamford, Lincs., the wife of Dr. J. Norman C. Ford, of a son.
LANSDOWN.—On June 15th, 1928, at 106, Woodcote Grove-road, Coulsdon, to Ermyn, wife of R. B. P. Lansdown, M.B.—a son.

MARRIAGES.

ADAMS CLARK—SMITH.—On June 12th, at the Church of St. Bartholomew the Great, Smithfield, London, Dr. Willoughby Adams Clark to Ruth Ashton, eldest daughter of Mr. and Mrs. Edgar Smith, of Stoneygate, Leicester.
BARROWMAN—BURN.—On May 24th, at Penang, Straits Settlements, Dr. Barclay Barrowman, of Klang Selangor, F.M.S., to Marguerite Emily (Peggy), younger daughter of Sir Joseph and Lady Burn, of Rydal Mount, Potters Bar.
CRAIG—BELL.—On June 12th, at Holy Trinity, Brompton, Nicholas S. Craig, M.D., of Cheadle Hulme, to Frances Molly Bell, of Burton-on-Trent.
SHEPPARD—MARSHALL.—On May 12th, at the Cathedral, Rangoon, Arthur Lewin Sheppard, Major, Indian Medical Service, to Edith Trelivíng Marshall, M.B., B.S., daughter of Mr. W. A. Marshall and Mrs. Marshall, of Brighton, Sussex.

DEATHS.

HOWARTH.—On June 15th, at Elvaston, Gerrard's Cross, William James Howarth, C.B.E., M.D., for 15 years medical officer of health for the City of London.
HUNT.—On June 13th, at "Windermere," Sheen-road, Richmond, Surrey, Lewis Gibson Hunt, M.D., J.P.
MACDOUGALL.—On June 12th, 1928, after an operation, John Aymers MacDougall, M.D., F.R.C.S.E., of The Hill, Balerno (formerly of Letterewe-Cannes), in his 84th year.
PRESTWICH.—On June 10th, suddenly, Frank Greenhalgh Prestwich, M.R.C.S., L.R.C.P., of Osgathorpe House, Osgathorpe, Leicestershire, aged 36 years.
WEBB.—On June 9th, at Hillfield-avenue, London, N., Dr. Hugh George Webb, aged 92 years.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

AN INTERNATIONAL SOCIAL WELFARE FORTNIGHT.

PUBLIC health and social welfare have drawn closer and closer together in the last 50 years, and at the present moment it is a difficult task to define the boundaries of the one or the other. The Latin-speaking countries do not attempt it; they have a comprehensive term "hygiène sociale," covering many activities which in English-speaking countries might be classed in either category. Public health workers will find much to interest them in the programme of the forthcoming International Social Welfare Fortnight, which will open in Paris on July 1st. During its progress four great international congresses will hold their meetings in succession, so that the delegates to each will have an opportunity of meeting those who are working in fields closely allied.

On Sunday, July 1st, there will be a joint inauguration ceremony, to which delegates to all the four congresses are invited, and the President of the French Republic will himself open the proceedings. On July 2nd the International Housing and Town Planning Congress[1] will open at Sorbonne. Among the subjects on the agenda are house-building costs, rural housing, housing of the poor, the mass and density of building in relation to open spaces and traffic facilities, and the difficulties in the way of town and regional planning. The second congress to meet will be the International Congress on Statutory and Voluntary Assistance, organised by a permanent international committee, which has held periodic meetings since 1889. The sessions, as well as those of the two congresses mentioned below, will be held in the new Salle Pleyel. The subjects on the agenda include the substitution of prevention for relief, the relief of foreigners, the "new poor," the aged, and the mentally defective—problems which have been acute during the post-war period of distress through which many European countries have passed. The International Child Welfare Congress will open on July 8th. Its sessions will coincide with those of the International Conference of Social Work, but will be so arranged that delegates may attend both conferences if they choose. Among the subjects on the agenda are maternity homes, breast-feeding, open-air institutions for children, social work for children, and the working of children's courts. Finally, the first International Conference of Social Work will also open on July 8th. The programme includes general organisation of social work, training for social work, methods of social case work, social work and industry, and social work and public health. The Conference over which Dr. Alice Masarykova will preside will hold plenary sessions in the mornings, and in the afternoons will divide up into five sections. Already national committees are working in 26 countries in connexion with this conference, and a large number of delegates are expected, including several hundreds from the United States. Soviet Russia is to be represented by Dr. Semachko, People's Commissar of Health, Moscow. In connexion with these congresses an international exhibition of housing and social progress will be held in the Parc des Expositions at the Porte de Versailles, from June 17th to July 17th.

[1] For particulars apply to Mr. H. Chapman, 29, rue de Sévigné, Paris, 3e.

PERCEPTION OF ACID TASTE.

THE tongue is usually held to be a fairly sensitive judge of acidity, and it is interesting to note that two workers in the Argentine, A. Berlatzky and T. Guevara, have investigated the relation between acid taste and actual hydrion concentration. They found that the limiting concentrations of pH for perception of acid taste were: sulphuric acid, 3·9; nitric, 3·2; citric, 3·9; tartaric, hydrocloric, and lactic, 4·3; acetic, 4·5; phosphoric, 4·7. Mineral acids, by reason of their greater dissociation and consequent greater hydrion concentration in solutions of equal alkali-neutralising power are well known to have a more markedly acid taste; but it might perhaps have been expected that the pH limit of perception of sourness would be the same for all acids. Berlatzky and Guevara suggest that the negative ions (e.g., sulphate and nitrate) have antagonistic action. Sulphate ions have a more depressant action on the nerves than chloride ions, as shown by the fact that concentration limit of the bitter taste of magnesium sulphate is higher than that of magnesium chloride.

This information appears to be new. In International Critical Tables there is a table of the relative sweetness of various substances and some quantitative information on colours, but none on the perception of sourness. This field may be commended to the experimental psychologist.

THE ART OF FLYING.

Captain Norman Macmillan, in a book entitled "The Art of Flying," has touched lightly upon many points of interest, dwelling not too deeply upon any one subject. Those seeking to acquire an insight into the general progress of aviation will enjoy reading it. Paragraphs here and there deal with medical aspects of aviation. Most of the statements made are reasonable and show common sense, although a few border upon the fantastic. The pilot of to-day must possess good physique, true perception (visual acuity and visual judgment), accurate power of performance (neuro-muscular coördination), combined with a temperament which fits him for flying. The first three of these essentials can be estimated by tests employed in the Royal Air Force Medical Service. The standardisation and interpretation of the results of all the special medical tests involved in the routine examination of personnel, whether for combatant service or civil passenger flying, are based upon the attributes of those aviators who, in the estimation of the responsible executive branch of the Service, proved themselves men of stamina, resource, and initiative during the war. Whether or not a candidate possesses the "flying temperament" cannot be judged from the results of any system of experiments or tests in use at the present time the decision remains, in the phraseology of the Service, "a question for the executive."

THE SIMPLEX ASEPTIC CLINICAL THERMOMETER.

Messrs. Coates and Cooper, 41, Great Tower-street, London, E.C., have put on the market a clinical thermometer which is contained in a metal case, 4½ inches long and about ⅜ inch in diameter, the case being retained in the pocket by a clip similar to those used for fountain pens. Within the case an antiseptic fluid surrounds the thermometer when not in clinical use, and means are provided for ascertaining whether the fluid is drying up or not. Without removing the container from the pocket the thermometer is easily withdrawn and replaced, while provision is made against leakage. The complete instrument is as easy to carry as a fountain pen, and the thermometer itself is completely protected and made aseptic.

ANTIMONY AND IPECACUANHA IN MALIGNANT DISEASE.

Prof. R. Minervini, of the University of Naples, who is senior surgeon to the hospitals in that city, is one of those who have a firm belief in the parasitic nature of the blastomata and considerable faith in the possibilities of chemotherapy. He has conceived the idea that parasitic agents, though they may not be found in developed tumours, may at one time have been present, and have promoted or stimulated the cellular proliferation which then continues unchecked, just as an ovum, once fertilised, develops into the blastoderm and embryo. According to his theory, if it is possible by chemical means to arrest the segmentation of the ovum, it should not be impossible to arrest in the same way the cellular proliferation which constitutes malignant tumours. Prof. Minervini has attempted patiently for many years to influence the growth of cancer in the human species and in animals by the action of many metals and metalloids in various forms and combinations. In his hands salts of antimony, especially the potassio-tartrate, have had a beneficial effect, and emetin has also had some influence, especially on deposits in glands when a total extract of ipecacuanha root was used. Prof. Minervini has combined these two agents in a compound under the name antiblastoma, and has used this largely both in hospital and private practice.[1] The remedy is prepared in two forms, a dilute solution for intravenous injection and another preparation for direct or parenchymatous injection, both methods being used simultaneously where possible. Prof. Minervini claims that under this treatment all forms of cancer of whatever organ and whatever stage show considerable retardation in their course; that the most important morbid manifestations such as pain and hæmorrhage are diminished or arrested, that ulcerations show signs of healing, and cachexia disappears. He states that in some cases the tumour was reduced in size and converted into a hard inert mass. Any fresh and bona fide attempt to find some therapeutic agent wherewith to combat cancer deserves attention, but we need not point out that of clinical impressions as to improvement following medicinal measures in cases of malignant disease must be subjected to critical inquiry before they can be accepted.

[1] La Riforma Medica, May 21st.

THE SURGERY OF YESTERDAY AND TO-MORROW.

To the Editor of THE LANCET.

SIR,—Mr. A. S. Blundell Bankart rather understated his case in the letter published in THE LANCET last week. The sentence he quotes from Erichsen's tenth edition, 1895, appears also in the eighth edition, 1884, 11 years earlier.

I am, Sir, yours faithfully,

June 15th, 1928. H. CAMERON KIDD.

COPPER AS A CONSTITUENT OF A HARROGATE WATER.

To the Editor of THE LANCET.

SIR,—In the course of research into the minor constituents of the Old Sulphur and the Chloride of Iron waters of Harrogate, I have definitely isolated a small quantity of copper from the latter source. The discovery is not original, for C. H. Bottomley, in 1880, recorded in an analysis of this water a trace of copper, which has not been confirmed until now. Since it is possible that every constituent, however small in quantity, plays a part in the pharmacology of a medicinal water, I was especially interested in an account in THE LANCET of May 19th from one of your American correspondents of some results obtained by Dr. E. B. Hart and his colleagues, in which anæmic rats were cured when a diet containing ferric chloride and a trace of copper was administered. They suggest that copper may be necessary as a catalyst in the formation of hæmoglobin. Geologically the presence of copper is of importance.

Until recently all the writers on the Harrogate waters have concluded that their origin was in rain water which is believed to percolate to the salt beds, and to reappear at the surface richer in mineral content. Prof. A. Gilligan, who has made a report on the probable relationship between the ore veins in the district and the mineral waters, holds that the waters arise from the depths of the granite and igneous magmatic rock forming the earth's interior. Heat and release of pressure allows a portion to percolate up through the sedimentary rocks, the Harrogate roadstone series, bringing up the saline materials. The finding of copper is evidence in favour of this theory—viz., that the Harrogate waters are "new" and do not depend in any way on rainfall.

I am, Sir, yours faithfully,

A. WOODMANSEY.

Royal Baths Laboratory, Harrogate, May 21st, 1928.

THE CHILD'S DOSSIER.

A MOTHER'S memory of her children's illnesses is a notoriously inaccurate source of information, from the doctor's point of view, and there are many instances in which a physician would be helped by a reliable record of a child's previous health and physical progress. Dr. Ruh and Dr. Garvin have provided a book,[1] attractively printed and bound, which is devised to encourage a mother to keep such a record. It may be questioned whether a busy practitioner, however willing to coöperate, will readily find time to fill in the various forms provided for his use—tests for protein sensitiveness, record of serum administration, laboratory findings, analysis of urine, and so on. The record covers the period from birth to 14 years, and landmarks to be recognised at points in the first six years are tabulated, with the caution that there is great variety of development among normal children. The child here taken as the average is certainly not advanced, since it is not till five years that he is credited with ability to count four objects, and only at six years with a knowledge of the letters of the alphabet. Such a record intelligently and conscientiously kept might be of value where a doctor sees a delicate patient for the first time or in helping him to fill up official forms for school or college, or for life insurance applications, while for the mother it will have a sentimental value of its own. The person who should never be allowed to see it in childhood is, of course, the child whose history it records.

SEX IN PARASITIC WORMS.

THE *Schistosomidæ* are the only group of trematode worms, parasitic in vertebrates, in which the sexes are separate and structurally very different in the adult stage. The development of this differentiation in *Schistosoma japonicum*, the blood fluke of Japan and China, has now been worked out by Mr. A. E. Severinghaus.[1] The eggs are laid by worms in the venules of the human intestinal mucosa and find their way into the bowel. Outside the body, each egg hatches into a free-swimming ciliated miracidium which has to find a specimen of one of the limited number of fresh-water snails which can act as a secondary host. If successful it bores into the tissues of the snail and forms a sporocyst, from the walls of which parthenogenetic eggs are formed; these develop into the cercariæ which leave the snail, burrow through the skin of the mammalian host, if they can find one, and pass to the portal blood system, where they develop into the sexual adults; up to this stage no sexual differentiation is perceptible. Using the hamster as an experimental animal, the author shows that all the cercariæ from a single miracidium are of the same sex—i.e., that sex is determined in the sexually produced egg and remains unaltered by the asexual generation which is interposed in the life history. Any one snail is commonly infected only by a single miracidium; hence, to be successful from the worm's point of view, a human infection must consist of cercariæ from more than one mollusc. The author adds some very interesting details about the influence of one sex on the other. In an animal infected with males only, the worms develop quite normally. But if only females are present, they grow slowly and very imperfectly and the reproductive organs hardly develop at all; if, later on, male cercariæ are introduced, the females rapidly go on to complete normal development and reproduction. One is reminded of the way in which a sexually indifferent oyster may be determined to maleness by the propinquity of a female.

HYPERPROTEINÆMIA.

HYPERPROTEINÆMIA is a very rare condition, and only a few cases have been published in the literature. The list has lately been increased by an account[2] of a case associated with multiple myelomata, in which careful analysis of the plasma proteins was made. The patient was a man of 40, with multiple myelomata of the plasma-cell type, involving the skull, ribs, spine, clavicles, pelvis, upper extremities, and femurs. Radiograms showed rarefaction with punched-out areas, and diagnosis was confirmed by histological examination of a piece of tumour excised from the femur. The urine showed a heavy cloud of albumin, with red and white corpuscles, and casts, while Bence-Jones protein was repeatedly demonstrated. Suspicion that plasma fibrinogen was high was aroused when an attempt was made to take a sample of blood for the estimation of the blood calcium, and it was found almost impossible to get any serum from the blood because the clot failed to retract. Subsequent analysis of the plasma proteins showed that they were increased to 13 per cent., which is twice the normal concentration. This increase was found to be chiefly in the euglobulin and slightly in the fibrinogen. A small amount of Bence-Jones protein was thought to be present in the plasma as well as in the urine. The authors point out that the Bence-Jones protein is chemically and immunologically quite distinct from serum and tissue proteins, and suggest that the increase in the globulin and fibrinogen fraction may be in the nature of a reaction to foreign protein such as is known to occur after the introduction of foreign proteins in animals, as in the production of diphtheria antitoxin in horses. They suggest that this and similar cases of hyperproteinæmia may be explained on the basis of systemic reaction to foreign protein.

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[1] The Child's Development and Health Record. By Harold O. Ruh, M.D., and Justin A. Garvin, M.D. London: W. Appleton and Co. 1928. Pp. 107. 10*s*. 6*d*.

[1] Quart. Jour. Microsc. Science, 1928, lxxi., 653.

[2] Hyperproteinæmia Associated with Multiple Myelomas. By W. A. Perlzweig, Ph.D., George Delrue, M.D., and Charles Geschickter, M.D. Jour. Amer. Med. Assoc., 1928, xc., 755.

BELFAST HOSPITAL FOR SICK CHILDREN.—Work is about to be begun upon the new buildings of this hospital, which is designed for 60 beds, 16 more than in the old buildings. There is no possibility of extending the present hospital or of improving methods of treatment. Although a site of five acres has been given by the Belfast Corporation the cost will be £100,000.

FUNDS FOR CANCER RESEARCH.—Towards the sum of £300,000 which the Council of the Lancashire, Cheshire, and North Wales Cancer Research Campaign hope to raise, £103,078 has so far been subscribed. The Public Health Committee of the Manchester Corporation have decided to recommend the city council to make a grant of £1000 towards the fund. It is hoped that other municipalities will followed Manchester's example.

Chadwick Lectures

ON THE

HISTORY OF EPIDEMIOLOGY

DURING THE LAST HUNDRED YEARS.*

BY SIR WILLIAM HEATON HAMER,
M.D. CAMB., F.R.C.P. LOND.

LECTURE I.

ON a cursory view the history of epidemiology brings to mind Swift's account of the controversies of the Lilliputians. During his first nine months' residence in Lilliput, Gulliver became greatly interested in some of these animated disputes, which were "significant of much"; that of the Tramecksan and Slamecksan, who for 70 moons past had been distinguished from each other by the high and low heels of their shoes, and that of the Little Endians and Big Endians, who disputed as to the proper way of breaking eggs. Gulliver concluded that the differences concerning breaking eggs were merely of a textual character, for, says he, going back to the origin of the whole dispute, the authoritative words are these: "All true believers break their eggs at the convenient end." This is an unexpected volte face, coming as it does from a man who had been apprenticed for four years to a medical practitioner, had studied medicine at a Dutch University, and had had experience as a ship's surgeon; if he had but completed this training by studying epidemiology he would have treated the subject more seriously.

In March, 1918, on the appearance of a new disease, controversy raged in London as to whether food poisoning or encephalitis was in question; on the one hand likenesses and affinities with recognised types of disease, on the other differences, were stressed. The episode emphasised the correctness of Sydenham's view that "the brief life of a single mortal" is not long enough to demonstrate "the fact of certain epidemics succeeding each other regularly and in series forming, as it were, a circle." He, however, when he was confronted with somewhat similar phenomena, in his "epidemic constitution" of 1673–76—the counterpart of our influenza constitution round about 1918—was moved to say: "All that I know is what I know well—namely, that up to the present time it has been exceedingly anomalous and irregular, and that all the diseases which have originated from it have been the same."

This difference of outlook in Sydenham's time as compared with to-day makes us recognise that in epidemiology, as in all branches of scientific inquiry, "general climates of opinion" are encountered. Prof. Whitehead, who borrows this phrase from an author of Sydenham's century, goes on to explain that such "climates" persist about two or three generations—that is to say, for periods of 60 to 100 years. In his "Science and the Modern World" he gives account of four of these climates, those immediately preceding our present climate. They are, first, the "Century of Genius," from Galileo, Kepler, and Shakspeare to Harvey, Milton, Sydenham, and Newton; next comes the eighteenth century, termed by Carlyle (whom Prof. Whitehead quotes) the "Century of Victorious Analysis"—the age of the great French mathematicians and of Kant, Lamarck, Watt, and Volta; then follows an interlude, which Whitehead terms the "Romantic Age," with Wordsworth, Shelley, Keats, Schubert, Carlyle, and Faraday; next in order comes Whitehead's "Age of Professionalism," practically coincident with the nineteenth century, but tending to peter out towards its termination, so that "in its last 20 years the century closed," says Whitehead, with "one of the dullest stages of thought since the time of the First Crusade." (Loc. cit., p. 143.)

It was an interlude of "decadence," "decline," say some. Miss Rose Macaulay prefers to call it a period heralding in advance the modern era, with its revival of the doctrine of relativity. Prof. Whitehead says:—

"The new tinge to modern minds is a vehement and passionate interest in the relation of general principles to irreducible and stubborn facts. All the world over, and at all times, there have been practical men absorbed in irreducible and stubborn facts; all the world over, and at all times, there have been men of philosophical temperament, who have been absorbed in the weaving of general principles. It is this union, of passionate interest in the detailed facts with equal devotion to abstract generalisation, which forms the novelty in our present society. Previously it had appeared sporadically and as if by chance. This balance of mind has now become part of the tradition which infects cultivated thought."

Dr. Brownlee's view may be compared and contrasted with that of Prof. Whitehead.

In 1908 Dr. Brownlee made some very interesting observations on periodicity in the manifestations of genius. He states that "Each period of English energy since the Conquest is associated with increase of population, and if this held also for the period of the Saxon invasion, then up till the present time there have been five waves of expansion, with four intervening periods, in which there was no national response to the intellectual action of the few great men who lived or ruled during these times of depression." These five waves cover 450–550 A.D., 650–800, 1290–1390, then the age from Shakspeare to Milton (Prof. Whitehead's Century of Genius), finally a period which "runs from 1760–1870" covering Prof. Whitehead's next three epochs, and bringing us to the dawn of his new mentality.

Dr. Brownlee said, "The effect of pestilences and famines must clearly be looked for in relation to the physical state of a people. Thus the Black Death, in 1348, little lessened the energies of England; Poictiers was fought in 1356, and the response of the people to the sovereign's policy was that of an energetic nation." On the other hand, "The plague in Athens was the mark of the end of a period. The population had passed their period of increase, and recuperation was necessarily a slow and uncertain process."

Sir Ronald Ross, in his work on malaria, refers to inquiries made on the influence of malaria in promoting the decline of the Greek civilisation, and this suggests that, in these later centuries, the influence upon civilisations, germinal vitality, genius production, and the like, of influenza, is deserving of study. This notion has been especially borne in upon the minds of observers of the great epidemics of the 'nineties and of the years 1915–27.

What special influences, epidemiologically considered, have climates of opinion exhibited?

Dr. Crookshank has stated that "In the last 450 years four periods seem to be indicated; periods marked by different phases of medical thought and observation. The first closes with the era of Willis and Sydenham"—i.e., it covers, roughly, Whitehead's Century of Genius. In it, "wide epidemic prevalences were observed and compared, as a rule, without resolution into component diseases, and symptoms obviously due to forms of meningitis, encephalitis, and myelitis, were described in relation to occurrences that we would now call disease groups."

Thus, in medicine, too, this period was one of genius; it was the age of Harvey and Sydenham, and thus saw both the inauguration of the experimental and the revival of the natural history methods of studying disease. It will be found in the next lecture that there is a notable revival of interest, nowadays, in this period.

The second period of Dr. Crookshank, like that of Prof. Whitehead, covers the eighteenth century; this, the age of "victorious analysis," is described by Crookshank from his standpoint as an age when systems of nosology were based upon symptoms, the symptom groups in question being "usually considered as different elements of special epidemic constitutions." This period saw great growth, of population and material resources, in Europe, with commencement of even more rapid growth in North America; it saw, too, the French Revolution and the inauguration of

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the industrial revolution. Incidentally, it may be noted that the developments in intercommunication and traffic at this time had considerable influence in favouring the spread of epidemic diseases. The century happily witnessed, however, the disappearance of plague from Europe and the inception of considerable improvements in the public health and in social services.

Crookshank's next period (corresponding with Whitehead's "age of professionalism") began in 1800, and in it, appropriately enough, "Persistent efforts were made to distinguish specific diseases by the findings of morbid anatomy." Population and means of communication in Europe and America grew by leaps and bounds. Cholera spread from Asia into Europe and caused much mortality; and influenza was phenomenally rife in the middle third of the century. Influenza again became pandemic in the 'nineties.

Crookshank's fourth period, beginning some 40 years ago, "is characterised by the distinction of many specific diseases by association with specific organisms."

Whitehead presumably had not this characterisation in mind when he affirmed that the commencement of this era was comparable, intellectually speaking, with that of the First Crusade. Whitehead, however, apparently considers that there was an escape from this phase in the early years of the present century. The new century has already had a great influenzal constitution of its own, that of 1915–25.

It was necessary, as a preliminary step, to sketch in broad outline the influences exerted by epidemic disease upon the progress of civilisation before approaching the special subject of the present paper. We have now reached the downward slope of the third of Whitehead's waves, and have to deal with the Age of Professionalism and with the immediate aftermath thereof. Our century begins upon a rising wave of genius and on the flood of the "New Momenta," of which Sir John Simon speaks in his "English Sanitary Institutions"; death-rates are falling, population and industry rapidly growing, but cholera is rife on the Continent.

The Nineteenth Century.

So far as epidemiology is concerned, the atmosphere at the commencement of the nineteenth century might be described in almost as gloomy terms as those Prof. Whitehead applies to the decade at the century's close.

J. F. C. Hecker, in an address, nearly a hundred years ago, to the physicians of Germany, asks "What are we medical men of to-day doing as regards investigating epidemic disease, on a scale commensurate with the extent of our exertions in other departments and worthy of the age in which we live." . . . "Are we," he says, "trying to penetrate with becoming reverence into the sanctuary of cosmical and microcosmical science. . . . Has medical science, as it exists in our days, with all the splendour which surrounds it" (Germany, it must be remembered, had already taken the lead in the patient and indefatigable work of the then commencing "century of professionalism"), "with all the perfection of which it boasts, satisfied this demand? This question we are obliged to answer in the negative." He describes how the doctrine of diseases "nurtured by the storms of centuries" . . . now "speaks clearly to the initiated in the languages of all civilised nations." Yet hitherto it has given an account only of individual diseases, so far as the human mind can discern their nature. In this it has succeeded admirably, and its success becomes every year greater and more extensive. But if we extend our inquiries to the diseases of nations, and of the whole human race, science is mute . . . shows us only an immeasurable and unexplored country which many suppose to be merely a barren desert.

Hecker's appeal in Germany is an indication of the new spirit that was stirring in this country, and one of the first results, here, was the passing of the Public Health Act of 1848, establishing a General Board of Health, which was to continue in operation "for five years and to the end of the then next session of Parliament." The achievements of this Board will always be associated very specially with the memory of three men.

Simon relates how the crucial work of the Board's first six years was carried out, apart from the four successive ex-officio members, by Edwin Chadwick, by an unpaid member, Lord Ashley (who, in 1851, became Earl of Shaftesbury) and (after its first two years of existence) by a medical member, Dr. Southwood Smith. In his account of the struggle between the Board and the "interests" opposed to its policy, Simon says that "most of the force of the attack was aimed personally at Mr. Chadwick," and it was he who bore "the distinction, which has been many a great reformer's crown of laurel, that he was among the best abused men of his time." To the ten years' hard work of Mr. Chadwick prior to 1848, "the nation unquestionably owes," says Simon, that "our statesmen of those times were first awakened to the duty of caring for the Public Health, and that the first of our modern legislative endeavours were made to bring health under the protection of law."

While the humanitarian spirit had then thus at length begun to find practical expression, the thirst for scientific inquiry concerning the laws of hygiene was also aroused. The stirring appeal of Hecker had evoked a fine response in Germany, and Dr. Babington, the translator of Hecker, in 1850, found himself the first President of the newly founded Epidemiological Society of London. Moreover, a certain Dr. Farr was appointed, in 1839, as Compiler of Abstracts in the Registrar-General's Office. "An appointment," says Simon, "which seems to have been due to Mr. Chadwick's early recognition of his merits." Medicine was thus addressing itself to the task of penetrating into the sanctuary of "cosmical as well as of microcosmical" science.

Hecker, in his address to the physicians of Germany, had lamented that epidemiology could not make itself "heard in the noisy tumult of the markets," and he added:—

"Hence it is that the doctrine of epidemics, surrounded by the other flourishing branches of medicine, remains alone unfruitful, we might almost say stunted in its growth. For to the weighty opinions of Hippocrates, to the doctrines of Fracastoro, which contain the experience of the much-tried Middle Ages, and, lastly, to the observations of Sydenham, only trifling and isolated facts have been added."

The frontal attack had, however, been delivered upon "filth diseases," "houses unfit for habitation," and the "free ravages of preventable disease," and one of the early results of this assault was the realisation of the fact that, as Hirsch put it in 1883, there was also needed—

"the founding according to a design, and the building up according to a system, of a discipline which had been the subject of but little labour before, and had still to make good its right to a place among the medical sciences."

He was able, however, to say (at that date)—

"Epidemiology bears a character quite different from that of the science 20 or 30 years ago. It has filled out in proportions and acquired finish to an extraordinary degree."

In illustration of the "finish" referred to, note may be made of an essay by Hecker himself on the "English Sweat," profoundly interesting for the light it throws on our modern influenza.

In the light of the experiences of the 'nineties and of Creighton's reflections following thereon, it was obvious in 1906, that—

"To cling to the individuality of the English sweat and of similar forms of disease contemporaneously prevailing in the several continental countries," was, epidemiologically considered, "an untenable position."

To-day there are the additional experiences of 1915–25 to guide us, and it is possible to appreciate more fully now many of the telling touches in Hecker's description of the English sweats, the interpretation of which was less obvious 20 years ago. Thus we are reminded, in reading about these prevalences, not only of influenza, but also of the widespread prevalences occurring in association with it, described now as "encephalitis lethargica," now as "Japanese encephalomyelitis," or by yet other new—or in some parts of the world quite old and familiar—designations.

Furthermore, when we read Hecker's paragraphs on "Influenzas" (p. 218), his note (p. 222) on the sweating character of the influenza of 1580, and his remark (p. 223) that "he must at least point out the relation which the influenzas bear to the greater epidemics"; when (p. 200) we find him connecting "the petechial fever of Southern Europe with the sweating sickness of the North," and read his comments on the epidemics of 1517, especially noting

(p. 227) his "feeling fully justified in classifying those of Holland and Germany with the influenzas," and when, finally, he speaks of their "being a forerunner of the English pestilence which was simultaneously prepared by the altered condition of the atmosphere and broke out a few months later," we must admit that he approached prodigiously close to identifying the English sweats with influenza.

A further illustration of the "finish" alluded to by Hecker is afforded by studies made in tropical countries of dengue. The maps prepared to illustrate the Milroy Lectures of 1906, show that widespread prevalences of influenza and dengue have throughout the epidemiological history tended to be interchangeable. Thus the West Indian Islands suffered from "influenza" in the world-wide prevalence of 1789–90, but in 1826–28 and in 1849–50, when influenza was again pandemic, "dengue" held the field in these islands; in subsequent years the West Indies reverted to use of the term influenza. Similar phenomena can be traced in British India and in the East Indies.

But while epidemiological field work, on the continent, in this country, in America, and in the tropics was thus slowly establishing an ordered system of records, a new development, potent no doubt ultimately for good, but attended temporarily by much counterbalancing retarding influence was now to be inaugurated. It is very interesting to recall the fact that, as long ago as 1881 in a letter to THE LANCET, Sir William Collins clearly pointed out that, while much had been achieved, there was already apparent a slackening in the rate of progress; he clearly saw, in fact, nearly half a century ago, the little cloud rising out of the sea no bigger than a man's hand, and prophesied the approaching storm. He developed his thesis in an Abernethian Society paper in 1884, entitled "Specificity and Evolution in Disease," in which he said:—

> "There can be no doubt that the tendency of pathology during the present century, thanks chiefly to the enormously increased means at our disposal to facilitate diagnosis, and fostered by the teaching of Bretonneau and Laennec, has been to specificise disease; and, while the recognition of the doctrine of specificity has done much to push on our knowledge by insistence on detail, and the estimation of minute differences, it is quite possible that this tendency may have served its end and surpassed its utility. That such is really the case we are frequently and forcibly reminded by disorders which come constantly before us, the so-called anomalous cases, where disease does not breed true, or where hybrid symptoms are developed, cases which do violence to our theories and defy our classification."

Sir William Collins added—

> "the solution of this difficulty lies in a more thorough recognition of the doctrine of evolution as applied to disease, as ruling and directing specificity."

Dr. J. T. C. Nash and other followers of Sir William Collins have made further contribution to this study of evolution and disease. Meanwhile, the rain descended and the floods came and beat upon the epidemiological house.

Pasteur's researches focused attention upon germs, and Koch's special technique dates from the late 'seventies and the early 'eighties. There were quite frequent announcements by those, who were working at bacteriology in the 'eighties, regarding the compliance of successive newly described organisms with Koch's postulates. The old epidemiology, like the silk stockings of Sir Jno. Cutler, was darned with worsted until so little of the original silk remained that no one could be sure that any of it was really left. The situation, it is true, became less strained when de Schweinitz, in 1903, demonstrated that hog-cholera was due to a "filter passer," and not, as had been previously supposed, to the hog-cholera bacillus. Already, in 1894, Gottstein had suggested that pathogenic germs might be merely playing the part of "associated organisms" ("jeweiligen Begleiter") in established conditions of disease, and a few years later O. Liebreich put forward the conception of "Nosoparasites"—i.e., of pathogenic germs which are not parasites proper, but parasites of diseases—that is, "accompanying" or "secondary" organisms. Moreover, in 1908, Hottinger declared that Koch's four conditions should be enlarged "by the addition of a requirement that the infectious character be exhibited by inoculated animals," and speaking more generally, he adds, the condition should be insisted upon "that the artificially produced disease must fulfil the requirements of epidemiology."

In preparing, for the History of Medicine Section of the International Congress of Medicine of 1913, a paper on "The History of Epidemiological Research during the last Seventy Years"—i.e., from the year 1843, when Pasteur came of age and Robert Koch was born—the influence of the great epidemics of the 'thirties and 'forties, of Chadwick's strenuous labours, of the aspirations of German scholars, and of the Epidemiological Society of London (founded in 1850), were all envisaged, and reference was made to Hirsch's dictum of 1881, that so great a change of outlook in epidemiology had come about that what was now needed was "an entirely new treatment of the subject."

It was also appreciated that bacteriology itself was beginning, shortly after the end of the nineteenth century, to recognise that a halt must be called for realignment. It was agreed that bacteriologists had then "outgrown Koch's postulates as Koch himself outgrew them," and that account must be taken of the results of 50 years' patient examination by epidemiologists "of the influence of environment, of conditions of filth, overcrowding, dampness, unwholesome and infected water, milk and food"; all this, taken together with increasing knowledge of protozoology, filter passers, enzymes, and the recent demonstration of mutability of bacilli, made it clear that still more attention must be devoted to the systematic development of a discipline as conceived and exploited by Hirsch. It was accordingly urged that further progress in knowledge of epidemic diseases was only to be gained by bringing about a "unity of opposites." As Prof. Caird says, "The thinker who has fully seen into the correlativity of given opposites has reached a new attitude of thought in regard to them. They have become to him inseparable elements of a higher unity, which is now seen to be organic or vital."

Fifteen years ago, then, it was urged that more energy must be devoted to cultivation of Hirsch's discipline with the object of further filling out its proportions, and giving it more complete finish. But it was not at that time fully realised that a line of advance to be followed was already clearly marked out. The great influenzas of 1915 and onwards brought the rude awakening, stimulating epidemiological inquiry in much the same way as similar epidemics had done in times gone by. Now, however, the path had been blazed through the forest by a great epidemiologist, who already in 1894 had focused attention upon the need for bringing into a higher unity the supposedly opposed teachings of Sydenham concerning epidemic constitutions, and of Pasteur and Koch regarding the germ theory of disease.

Chas. Creighton, who had rendered epidemiologists in these islands the signal service of translating for them Hirsch's great work on "Historical and Geographical Pathology," published in 1891, the first volume, and, in 1894, the second and final volume, of his "History of Epidemics in Britain." I will not here attempt to give an appreciation of those epoch-making volumes; the most remarkable characteristic of the work is, that a pathologist by training, in an age when pathology with the added prestige contributed by the new bacteriology was steadily acquiring growing importance, calmly set to work to fill out the proportions and give more complete finish to the old epidemiology. But this new teaching must form the theme of my second lecture.

PETERBOROUGH NEW HOSPITAL.—Field-Marshal Sir William Robertson has formally opened the Peterborough and District Memorial New Hospital. The building and its site have cost nearly £95,000.

ST. MARY'S HOSPITAL, PADDINGTON. — The Governors have purchased, at a cost of £65,000, a large block of property in Praed-street, South Wharf-road, Cambridge-place, and Union-place, upon which it is intended to build a new medical school, an inoculation department, and a new home for nurses. The site, which is self-contained, is larger than that occupied by the hospital and the existing medical school, and the space liberated by the closing of the present nurses' home will be used for the accommodation of paying patients.

THE MENTAL ASPECT OF CHRONIC EPIDEMIC ENCEPHALITIS.

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THE problems of the mental disorders associated with chronic epidemic encephalitis have been overshadowed, in the enormous literature, by the neurological and moral aspects. We have had the opportunity of investigating many uncertified cases and of observing daily, for three or four years, over 120 certified cases at West Park Mental Hospital, and 24 cases in the Manor Institution for mental defectives. In this paper an attempt is made to describe some of the mental characteristics noted, to discuss some of the difficulties in diagnosis, and to construct some sort of classification for the multifarious symptoms. No classification appears yet to have been formulated, at any rate in the English language, and although the writers are only too conscious of the difficulties of such a task and of the short-comings of their venture, they hope that it may lead to a clearer conception of the mental pictures and to more successful attempts from other pens. It must first of all be clearly recognised that the groupings arranged are by no means mutually exclusive and are, in fact, rarely found singly; but this applies equally to all classifications of mental disorders. Again, it is not at all uncommon for the mental picture to change from one type to another in the same individual.

Classification.

(*a*) Bradyphrenic.
(*b*) Depressed: (1) reactive; (2) agitated; (3) hypochrondriacal; (4) psychasthenic.
(*c*) Paranoid: (1) systematised delusions; (2) unsystematised delusions.
(*d*) Apache: (1) delinquent; (2) restless.

The Encephalitic Temperament.

The encephalitic temperament is marked by a definitely simple and childish outlook and a regression in emotional values, well seen in the morbid craving for attention exhibited by nearly all sufferers. The patient and his illness "must occupy the centre of the stage."[1] The doctor, entering the ward, is greeted by every patient; those who can walk may follow in a body, each vieing to attract first attention to himself, whilst the most helpless of Parkinsonians attempts as well as he can to bring the doctor to his side. Unlike the epileptic, who usually has some complaint to make, the encephalitic may have nothing in particular to say but merely desires recognition.

While one of us was taking several encephalitics for a car ride, one of them, who was in the dicky, suddenly tapped the driver on the shoulder in the midst of dense traffic, and asked a question, which was unintelligible owing to the noise and the patient's indistinct speech. He persisted with his question until the driver had to pull up the car by the side of the road in case something serious was the matter. The question then turned out to be: "What make of car is this?" Only with an encephalitic would such an incident be possible.

Again unlike the epileptic, he will be definitely, though often quite transiently, affected by the attitude of the visitor towards him. Like a child, he is hypersensitive, and overvalues the trivial greetings of those attending him, being put out by incidents which would pass almost unnoticed by the average normal adult. Many mental defectives show somewhat similar characteristics, but the encephalitic tends to show keen insight into his own disease; he displays greater interest in his symptoms and a more detailed knowledge of his treatment than does the normally intelligent sufferer from some other serious disease. One small girl of 11, who had very definite intellectual deterioration as shown by successive Binet tests, could give a detailed account of her history and symptoms, could recite at length the opinions of various doctors on her primary attack, and volunteered the names of several drugs with which she had been treated. It is probably this abnormal brightness about their own illness that has led many physicians to aver that there is no mental deterioration in many of these patients, even in some who have been certified. It doubtless also accounts for the statement that encephalitic Parkinsonism is usually associated with euphoria. What is really present is an emotional facility and, as nothing gives the encephalitic more pleasure than to describe his symptoms to an interested audience, he does on such occasions exhibit a childish elation. This, however, is only a passing phase, and close observation shows some degree of mental degeneration in nearly every case. Although the main changes lie in the emotional sphere, there is an accompanying loss of ordered judgment, an inability to view things in their proper proportion; in fact, a return in greater or lesser degree to the outlook of childhood. Another noticeable characteristic in the majority of these cases is abnormal suggestibility.

Seven female patients were given, in addition to their morning injections of hyoscine, a small dose of hyoscine by the mouth at 1 P.M. After some time this was replaced by flavoured water. A few noticed the slight change in taste and were told that it was a different brand of hyoscine, probably stronger. All said they were as well if not better than before. Some days later the oral dose was altogether withdrawn. With one exception they all complained of feeling very much worse and begged to be put back on the "hyoscine." All these patients suffered from various degrees of Parkinsonism, the majority showing little intellectual defect. It is not intended to suggest that the effect of hyoscine in Parkinsonism is entirely a functional one; on the contrary, the beneficial effect of this drug upon the tremor, rigidity, and general feeling-tone of these cases has been repeatedly proved.

This fundamental temperament is seldom found alone, and is often overshadowed by the more striking features of bradyphenia, apache behaviour, &c.

Bradyphrenic Type.

The main body of Parkinsonians, in addition to the characteristic temperament, display a retardation of cerebration which is usually, but by no means always, proportionate to their individual physical retardation (bradykinesia). This symptom, which appears to be correlated with an unpleasant sense of effort in initiating thought or movement, brings poverty of ideation as a natural corollary in its train. The psychic and psychomotor processes which are essential to thought and voluntary movement should be capable of considerable mobility and rapidity of action in initiating, changing, or stopping such thought or movement. Something interfering with normal induction in these reflexes (Sherrington) would explain the mental viscosity which occurs in bradyphrenia and for which no localised lesion could account. A function of the whole nervous system is affected, for bradyphrenia and bradykinesia must be regarded as the same phenomenon acting at different levels of the nervous system. It has been shown by Delmas-Marsalet[2] that the stiffness or hypertonia of Parkinsonism and the slowness of movement in bradykinesia are independent phenomena. This is borne out by clinical experience and accounts for many phenomena which at first sight seem paradoxical. In it may lie the explanation of the different results obtained from the exhibition of hyoscine in Parkinsonism. This drug acts by abolishing any extrapyramidal hypertonicity present. For Parkinsonians who have little or no such hypertonicity hyoscine proves practically useless.

All grades of bradyphrenia are found, from mild retardation to marked lethargy. The latter sit or lie with eyes closed, apparently asleep; they are only aroused with difficulty, and every attention has to be given them. This somnolence is, of course,

quite different from the drowsiness of the acute stages. It is important to differentiate the bradyphrenic who has merely lost the power of emotional expression from the stuporose patient who has lost the power of feeling emotion.

Depressed Type.

Depression is by no means an uncommon symptom, and we have subdivided it into reactive, agitated, hypochondriacal, and psychasthenic groups.

1. *Reactive depression* depends upon the peculiar sensitiveness of the patient to the gravity of his disease and is mainly evident in the early stages of Parkinsonism. The patient feels his increasing disabilities becoming an intolerable burden, which added to his regressive temperamental changes, is only too likely to lead to thoughts of suicide. As in other reactive depressions, the apparent cause is doubtless only precipitating, the latent cause being some flaw in the mental make-up. In these cases, however, the flaw need not be a serious one, as the precipitating cause is so severe. It is a difficult and depressing task to realise philosophically that one has suddenly ceased to be the man one was, that all one's dearest ambitions and hopes must be forever foregone and replaced by the picture of a life of chronic invalidism. Real adaptation, however, calls for this philosophical outlook, and any other form of reaction must be regarded as regressive. We may regard this class as having made a compromise, preventing complete regression by obsessive preoccupation with their situation, and so long as the regressive tendency is thus satisfied, the mood is essentially one of anxiety or depression. Detention in a hospital where constant attention, freedom from responsibility, and the presence of others similarly afflicted are to be found is usually instrumental in bringing about an adjustment. Instead of this improvement, a state of mild stupor of variable duration may follow, but only two such cases have been encountered by the writers.

2. *Agitated Depression.*—Occasionally a condition of agitation and confusion with motor and psychical restlessness, obsessional delusions, and hallucinations has been noted.

CASE 1.—Male, aged 33, displays a striking picture of agitation, confusion, and emotional dilapidation. He is subject to delusions of substitution and reference, and is actively hallucinated. He sees strange creatures and people coming out of holes in the walls or ground. He bursts into tears with the utmost facility, bemoaning his lot in a confused and emotional manner. There is a history of a characteristic acute attack of encephalitis, and this diagnosis is supported by the neurological signs now present. Before admission he was depressed and suicidal.

3. *Hypochrondriacal depression* is less rare and is not to be confused with the morbid interest taken by so many patients in their symptoms. These patients are true hypochrondriacs and have a genuine belief in their many and varying imaginary symptoms. Owing to their mental and physical disabilities many encephalitics are precluded from dominating their environment in the usual way through their personality and normal activities, and have regressed to the stage of exploiting physical disease as a means of attracting attention, a somewhat similar mechanism to that seen in other hypochrondriacs with their dulled "health conscience."

4. *Psychasthenic Depression.*—States of anxiety, obsessional impulses and doubts, and feelings of inadequacy and infirmity, characteristic of Janet's conception of psychasthenia, are not uncommon.

CASE 2.—A single woman of 35, suffered from a febrile attack in April, 1924. She was very drowsy and was in bed for a fortnight. Later on inversion of sleep rhythm was prominent. She has never fully recovered from this attack, but has felt nervy ever since and has suffered from "pressure on the top of the head." She now has a distressing polydipsia which causes extreme agitation and depression and has led to two attempts at suicide. Polyuria sometimes amounts to over 300 c.cm. daily. Regular injections of 0·5 c.cm. pituitary extract have a slight but transient effect, and it appears that the water-drinking is an obsession. The patient is intelligent and has never lost insight, but is anxious about herself, worries continually, and is altogether lacking in confidence. Physically there is a suggestion of stiffness about the features, and her skin is rather greasy. Her right arm is often held fixed and adducted, and cog-wheel movements can be elicited at times. There is an occasional tremor of her right hand, which is sufficient to prevent the performance of fine movements.

Paranoid Type.

This is the smallest of the four groups, but the fact that 10 per cent. of our patients belong to it shows that the type is by no means uncommon, at least among certified cases. These patients are preeminently suitable for a mental hospital, and doubtless practically all of them are sent there sooner or later. Its recognition is important, as many of the symptoms —e.g., hallucinations and definite delusions—are considered by other observers to be extremely rare, and in the absence of signs of Parkinsonism it is extremely difficult to distinguish this type from ordinary cases of paraphrenia (systematised delusional insanity) and dementia præcox. In fact, cases crop up, with indefinite histories of acute attacks of encephalitis and with no neurological signs, in which it is almost impossible to arrive at a definite diagnosis. The relative infrequency of delusions of persecution in encephalitic psychoses is really rather surprising in view of the peculiar temperament of these patients. Their constant preoccupation with their illness and symptoms should make a fertile ground for such delusions, especially of the type sometimes described as hypochrondriacal paranoia.

We have subdivided the group into two classes, according to whether the delusions are systematised or not.

1. *Systematised Delusions.*—The commonest symptoms are ideas of reference, pseudo-reminiscences, and hallucinations of all senses, but especially of hearing; delusions, chiefly persecutory but sometimes pleasantly erotic, usually autopsychic but also somatopsychic. The content of the delusions is often palpably dependent on the physical symptoms. The usual paranoid interpretation of events is seen and the affective state is congruous with the delusions. Some cases are absolutely indistinguishable from the usual paraphrenia, but certain distinguishing features may be noted in a majority. The chief of these is a definite periodicity in the activity of the delusional symptoms, which drop into the background for longer or shorter periods, during which some patients have quite a fair insight into their condition, and others can be temporarily convinced that their beliefs are delusional. Another characteristic is that with the progress of bradyphrenia all paranoid symptoms may gradually disappear.

CASE 3.—Male, a moderate Parkinsonian of 35, is extremely suspicious and suffers from various delusions of reference and persecution. At times he thinks that other patients are staring at him and pointing him out because they know he masturbates. He hears references to himself and feels that he is an object of contempt. He complains of patients putting something on his clothes at night, which gives them a fish-like smell, and he also suspects the staff of trying to poison him. He possesses very fair intelligence and at times has partial insight into his condition.

CASE 4.—Male, a moderate Parkinsonian of 20, shows a similarly suspicious outlook and is subject to delusions of persecution. He is aurally hallucinated and complains of people talking about a love affair of his. These symptoms sometimes disappear for months, but when they return the contents of his delusions are always the same.

CASE 5.—Male, an advanced Parkinsonian of 45, for two years presented a picture of ordinary paraphrenia with ideas of reference, auditory hallucinations, and delusions of persecution referable to his environment. He gradually developed an increasing bradyphrenia, ceased to exhibit these symptoms, and is now in a state of advanced lethargy.

CASE 6.—Female, a marked Parkinsonian of 21, whose psychosis is superadded to some degree of feeblemindedness, is superficially a typical dull, retarded bradyphrenic. She is, however, actively hallucinated by "Jimmy," who is constantly calling to her. She wanders through the ward and gardens searching for him and eagerly goes up to strange visitors or workmen, hoping to find her friend. Any

reference to her "Jimmy" will provoke an immediate smile and there is no doubt that she gains much pleasure from her innocent phantasy.

2. *Non-systematised Delusions.*—Much the same series of symptoms is found in this class—viz., ideas of reference, hallucinations, &c. The delusions, however, are definitely unsystematised, often varying much from day to day, and, when inactive, are discussed by the patient with schizophrenic indifference. The content of the delusions points to a much greater degree of regression than in the former group and may be frankly sexual. Emotional dilapidation is evidenced by impulsive and apparently motiveless outbursts of violence, and by incongruity between the affective state and the conduct of the patient. In short, the mental picture is indistinguishable from that found in many schizophrenics.

CASE 7.—Female, a moderate Parkinsonian aged 27, is a confirmed masturbator, subject to impulsive outbursts of screaming and smashing for which she can offer no adequate reason. She is actively hallucinated, hearing the voices of her mother and child. She is extremely irrational, with various fleeting delusions based on her hallucinatory experiences. When questioned about her symptoms, she adopts an indifferent schizophrenic attitude towards them and fails to regard them as in any way abnormal.

CASE 8.—Female, a slight Parkinsonian of 26, has outbursts of window-smashing, very similar to those of Case 7. They are usually preceded by a phase of depression, in which she hears the nurses saying she has a "sarcastic face." She is also hallucinated by the voice of one of the medical officers, which continually reproaches her. She, too, adopts an indifferent schizophrenic attitude towards her hallucinations.

CASE 9.—Male, a marked Parkinsonian of 18, is convinced that he is suffering from worms which have entered his body per urethram. He states that he can feel them moving about inside him and maintains that recovery can be brought about only by their removal. The presumption that these somatopsychic delusions were initiated by proprioceptive or enteroceptive sensations is in no way incompatible with the fact that the patient's present attitude towards them is essentially that of a sufferer from dementia præcox. This schizophrenic indifference is so great as to mask successfully the customary interest of the encephalitic in his illness.

The Apache Type.

The term apache has been used almost universally in the description of cases of chronic epidemic encephalitis whose chief characteristics are delinquency and bad conduct, and therefore the apache syndrome is here meant to include all behaviour irregularities, from mischievousness to serious crime. It is seldom found in patients who have passed adolescence at the time of their primary attack. On the other hand, apache symptoms may continue, as far as we know, indefinitely. The condition appears to depend partly on a heightened irritability and diminished power of control and partly on a lack of reasoned judgment and self-criticism. This mechanism may well be that of "regression due to removal or suppression of the epicritic control over the protopathic instinctive tendencies."[3] In any case, the result is a more or less complete disintegration of those psychological sentiments which contribute to the social and moral senses. Children of irreproachable family, hitherto of exemplary behaviour and character, may in a very short period become guilty of every delinquency from mere naughtiness to cruelty and murder, and from mild bad habits to gross indecencies. We have only met one case of sexual perversity in an adult encephalitic. This is a male Parkinsonian of the bradyphrenic type, aged 40 years, who was considered well enough to be discharged to the care of his friends but who had to be returned to hospital as he started exposing himself indecently in front of his children.

Motor restlessness is a striking feature in these patients and may be responsible for the numerous cases of "wandering," as well as for their pugnacity. Tics and nervous habits are common, varying from simple movements and grimaces to complicated performances. Peculiar anomalies of gait are seen, such as flexing one knee at every step, constantly changing step, revolving round, &c. Several patients run up to speak to the doctor and then throw themselves on to their backs with their legs half in the air; one boy actually turns a complete somersault. That this phenomenon is not due to imitation is proved by the fact that such cases are found both at West Park and at the Manor Institution, and that their antics have been noted soon after admission and before they had had any opportunity of seeing other encephalitics.

It is convenient to divide the apache group into those whose most prominent symptom is delinquency and those who are chiefly distinguished by restless, troublesome behaviour. The former may provide a picture of "moral imbecility," which is seldom seen outside encephalitis. The latter show a more aimless activity in which restlessness, interference with others, irritability, and quarrelsomeness are prominent. To this type Hall gives the name of the "difficult child," and there is no doubt that many become quite unmanageable at home and yet show no really vicious or criminal tendencies. With the majority, however, it is merely a question of which form of activity predominates, and, although the division is convenient for clinical purposes, there is probably little psychological difference in these cases between aimless mischief and seeing what can be found in somebody else's pockets. Prominent in some apache cases, with or without Parkinsonism, are periodic outbursts of acute excitement which may last for several days. During these periods the patient may be noisy, destructive, impulsively violent, and sometimes hallucinated.

Differential Diagnosis.

Bradyphrenic.—There is usually no difficulty in diagnosing the bradyphrenic class, as Parkinsonism is invariably present. It is sometimes stated that the catatonic stupor of dementia præcox closely resembles encephalitic Parkinsonism. This is certainly true of the outward appearance of the two diseases, but in practice there is little difficulty because of the profound difference in mentality. The catatonic is indifferent, sometimes entirely inaccessible; his voice may be affected, and his ideas are almost certainly irrational. The characteristic indistinct monotonous slur of the encephalitic Parkinsonian is conspicuously absent. The gait may show similarities but, if advantage be taken of the automatic obedience of so many catatonic patients, a few sharp commands will frequently alter gait and posture in a striking manner. The main criteria, however, lie in the constant absence of inaccessibility and indifference in the typical emotional reactions of the encephalitic. A few hypodermic injections of hyoscine may be a valuable aid to diagnosis, as they frequently lead to immediate improvement in the Parkinsonian but have no effect on the catatonic.

A very real difficulty arises in diagnosing early cases of catatonic dementia præcox from the somnolent phase often found in acute epidemic encephalitis, and the prominent part that epidemic encephalitis now plays in the lay and medical press, combined with the knowledge that many cases of this disease have passed unrecognised, has created a tendency to give epidemic encephalitis the benefit of the diagnostic doubt in difficult cases. As a matter of fact there are fundamental differences in the mental pictures. The catatonic patient has periods of stupor of greater or lesser degree alternating with periods of excitement, and when these latter occur at night, as they commonly do, the patient superficially resembles the encephalitic with inversion of sleep rhythm. If the encephalitic is roused, however, he is accessible; his answers are rational and he will not express any delusional ideas. The catatonic, on the other hand, may exhibit automatic obedience, remain mute even if roused, or show definite evidence of being hallucinated, and will usually unfold a delusional thought-content. Even in his periods of excitement the encephalitic rarely voices the

bizarre delusions so common in the catatonic, and he certainly does not do so in his quiet moments. The following case illustrates this difficulty :—

CASE 10.—A single girl of 20 was admitted to West Park Mental Hospital with the following history. She had been vacant, dreamy, and strange in manner for about two months. For two or three weeks she had been wont to sit in one position, gazing out of the window instead of doing her work as a housemaid. At night she was restless and talkative, and slept badly. She was at length sent home and seen by a doctor, who sent her to a general hospital where she was kept under observation for a day and a night. She was restless and troublesome during the night and was next day sent to an infirmary with the diagnosis of epidemic encephalitis. On admission here the following day no neurological signs of epidemic encephalitis were present. She showed a gait simulating the Parkinsonian and an affected type of speech. She was rather irrational and showed incipient dementia. She was definitely apathetic, and when roused her manner was indifferent and uninterested. The diagnosis of dementia præcox has been abundantly confirmed.

A recent text-book states that Parkinsonians are usually apathetic, but it is essential to recognise the difference between bradyphrenia and the true stupor reaction. The encephalitic may be supremely dull but is not indifferent. True stupor is rarely seen in chronic epidemic encephalitis, but when it does occur it may completely efface the more usual encephalitic temperament. Again, as the disease progresses, an emotional dementia like that of other organic brain diseases often supervenes. By this time, however, the physical signs are so prominent that no difficulty in diagnosis should arise.

Depressed.—The commonest type of encephalitic depression is reactive and largely dependent upon the disabilities of Parkinsonism. As a rule there should be no difficulty in diagnosing it from the depressed phase of the manic-depressive psychoses. Alternations with elation are common in the latter, and there is frequently a past history of similar attacks or of family mental disorder. If the patient has insight, then, unlike the Parkinsonian, he is unaware of the cause of his depression ; while, if he has not, he usually puts it down to imaginary sins. We have seen no cases of manic-depressive insanity in the chronic stages of epidemic encephalitis. More interesting, however, is the diagnosis in those cases who show no Parkinsonism, but whose mental changes include loss of concentration, easy fatigability, sense of effort and inadequacy, fits of depression and tears, anxieties, and obsessions. Psychasthenia and anxiety hysteria are frequently simulated, and in the absence of Parkinsonism the diagnosis must depend on the past history and on isolated signs. Case 2 presents some of these symptoms, and the following case may be of some diagnostic interest :—

CASE 11.—A girl of 16 was admitted to West Park Mental Hospital six months ago, since when she has behaved well, has been a good and willing worker, and appears to be quite trustworthy. She is inclined, however, to be solitary and rather sullen, and is sometimes found weeping bitterly for no apparent reason. Her outlook is abnormally childish and simple for her age. She takes violent fancies to certain nurses, and is inordinately upset by the slightest sign of displeasure on their part. Physically there are no signs of Parkinsonian, but nystagmoid movements and a convergence defect, together with a rather definite history of diplopia, make up a fairly characteristic ocular syndrome. She is said to have had "sleepy sickness" in 1919, and since then has been through a phase of wandering at night, using filthy language, and indulging in indecent behaviour. She has also attempted to commit suicide.

A mistaken diagnosis of neurasthenia or psychasthenia can often only be avoided in early cases by thorough investigation into the history and by careful examination of the central nervous system. Just as an apparent case of neurasthenia coming on between the ages of 30 and 50 should bring to mind the possibility of general paresis, so a similar syndrome in younger patients should lead to thoughts of epidemic encephalitis.

Paranoid.—The paranoidal types of epidemic encephalitis cannot be distinguished with any certainty from other paranoid psychoses in the absence of definite physical signs or of a conclusive history of an acute attack.

Apache.—The apache type must be distinguished from mental deficiency per se, from dementia præcox, and from mania. From mental deficiency there is no difficulty when the symptoms appear after a definite primary attack. In fact, apache symptoms appearing in a child or young adult of hitherto normal behaviour and normal intelligence are strongly suggestive of epidemic encephalitis, even in the absence of other evidence. There are, however, difficult cases, which have a legal as well as a medical interest, as when encephalitis attacks those who come from an insane or defective stock or who have been feeble-minded from an early age. In such people, whose self-control is already poor and whose judgment is subnormal, the pathway of regression to completely uncontrolled and vicious actions is most easily traversed. There may be only a vague history or perhaps none at all, and here it is doubtful if one can make a diagnosis with any great degree of certainty. Nevertheless, those who come into contact with a large number of mental defectives of all types, as at the Manor Institution, Epsom, hold the opinion that there is a definite difference. The encephalitics are the most troublesome and pugnacious children in the ward. Their delinquencies are more wanton, more bizarre, more constant, and more intractable ; and yet they are usually the most popular patients with the nursing staff. They are seldom cowards and, although they will bully smaller children heartlessly, they will also hold their own with older and stronger patients. When taken to task, their comments are often ingenious and show some sense of humour. These characteristics are due in part to the increased motor and psychic activity, which is a more constant feature in the encephalitic apache than in the mental defective.

The presence of major or minor epileptiform fits by no means excludes the diagnosis of epidemic encephalitis.[4] Quite a few of our patients are subject to fits indistinguishable from those seen in true epilepsy. Petit mal attacks are also seen, and it may be that some of the very transient oculo-gyric crises are of this nature. One case under our care has frequent attacks in which his eyes momentarily turn upwards and to the left, while a vacant glassy expression comes over his face. Atypical, especially mesencephalic (decerebrate) convulsions are more suggestive of encephalitis than of epilepsy. A history of epileptic fits going back to early childhood is, of course, against the diagnosis of encephalitis. In doubtful cases, with indefinite histories and physical signs, the general behaviour and temperament should give a good idea of the true cause.

Another important factor in the differentiation of the apache encephalitic from the troublesome defective lies in the ratio of intelligence disorder to behaviour disorder. The encephalitic is almost invariably intellectually superior to his conduct. When marked apache behaviour appears in cases of pure mental deficiency, it is usually associated with a condition of idiocy or low-grade imbecility, and the intelligence-behaviour ratio is approximately equal.

The outbursts of temper in some apache types are not unlike the impulsive outbursts of the catatonic dementia præcox in their sudden onset and severity ; impulsive smashing, for instance, is seen in both conditions. The key to diagnosis lies in the conduct between attacks. The præcox is irrational, detached from the outer world, and usually hallucinated. The apache is emotionally facile but shows none of the præcox symptoms.

The suggestion that apachism is really a form of mania [5] cannot be supported. The superficial similarity between the two conditions is less noteworthy than the fundamental differences. The cardinal symptoms of mania are flight of ideas, elation, and increased motor activity. The apache admittedly shows an excess of motor restlessness, and some patients are for ever on the move, peering into everything and

getting into continual mischief, fidgeting with their hands and feet even when seated. This restlessness, however, is quite different from the "press of activity" of mania. Again, the lack of concentration and easy distractibility of the apache differ greatly from the flight of ideas of the maniac. The attention of the latter, passing rapidly from one subject to another, embraces an enormous amount of ideational material, while that of the apache tends to hover over a relatively narrow field. Five minutes' conversation with a restless apache will see him return to one subject, often even one sentence, half a dozen times. In short, the apache shows some degree of ideational poverty which is in sharp contrast with the evident fertility of ideation seen in mania. In the former type a definite "goal idea," childish though it may be, is undoubtedly present, whereas mania is associated with a garrulity in which any sort of "goal idea" is conspicuously absent. Of true elation the average apache shows little evidence. The childish euphoria which he exhibits while carrying out his various peccadilloes or discussing them and his other symptoms depends on his childish reactions and emotional facility, and is very different from the sustained sense of well-being of the manic patient. Lastly, if apachism were merely a form of mania, one would surely be justified in expecting to find an occasional case which showed the cardinal symptoms of mania in an unmistakable manner over a reasonable period, but the writers have met no such case in a chronic encephalitic, either with or without apachism.

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A NOTE ON THE EFFECT OF ACETYLARSAN IN EARLY SYPHILIS,

WITH SOME REMARKS ON ITS TOXICITY.

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BEFORE the introduction of salvarsan Ehrlich had carried out many investigations on the therapeutic effect of various organic arsenical compounds. One of the earliest preparations was a member of the group of pentavalent arsenical compounds known as "atoxyl." This compound, as shown later by Fourneau [1] was originally prepared by Bechamp [2] in 1863 and was the sodium salt of *p*-aminophenylarsinic acid. Before long severe toxic effects, notably sudden amblyopia, were reported and finally led to its disuse. Later two more members of this group were introduced into the therapeutics of syphilis; arsacetin, the sodium salt of acetyl-*p*-aminophenylarsinic acid and hectine, the sodium salt of benzo-sulpho-*p*-aminophenylarsinic acid. These two preparations, although much less toxic than atoxyl, were by no means free from undesirable sequelæ; arsenical nephritis frequently followed the use of arsacetin. On the introduction of the group of trivalent organic arsenical compounds, of which salvarsan is the outstanding member, and later of its modification neosalvarsan, the interest in pentavalent arsenicals underwent a temporary eclipse. Further interest in them was aroused by the introduction, in 1919, by Jacobs and Heidelberger,[6] of tryparsamide, the sodium salt of N-phenylglycineamido-*p*-arsonic acid. Its effect in the treatment of neuro-syphilis has been reported upon favourably by many observers, who have also drawn attention to the occasional occurrence of amblyopia as one of the more severe toxic effects. In this respect it is similar to atoxyl. In 1922 Levaditi [3] and Navarro-Martin renewed interest in the pentavalent organic arsenical compounds by their report upon the therapeutic action, in experimental syphilis, of stovarsol. This compound, acetyl-oxyaminophenylarsinic acid, originally prepared by Ehrlich, Benda, and Bertheim [4] in 1908, was reinvestigated by Fourneau [5] in 1922. The addition of the acetyl radicle renders this compound more stable and far less toxic than its forerunner atoxyl, to which it is closely allied. The therapeutic effect of the oral administration in human syphilis has been studied by Fournier, Quenot, and Schwartz,[7] who reported that its action was inferior to that of the arsenobenzenes.

Recently another member of the pentavalent series of organic arsenical compounds has been in use in France where it is now manufactured under the name of acetylarsan.* This preparation, which is closely allied to and a derivative of stovarsol, is stated to be *p*-oxy-acetylamino-phenylarsinate of diethylamine. The therapeutic effect in the various stages of syphilis has been reported upon favourably by Laurent [8] Lacapère,[9] and Tribet.[10] Acetylarsan is supplied immediately available for therapeutic use, in an aqueous solution containing 23·6 per cent. of the compound. The solution, which is neutral in reaction, colourless, and clear, contains 5 cg. of arsenic per c.cm.; each c.cm. is equivalent to 0·25 g. of novarsenobillon (N.A.B.) in arsenic content.

It may be administered intravenously, intramuscularly, or subcutaneously; the latter is most generally utilised. Subcutaneous injection, under the skin of the buttock, was the method selected in the cases under consideration; complaints of local reaction following injection were exceptional.

Dosage: The maximum dose tolerated in rabbits is 40 cg. per kg. In man the ratio of administration is 2 cg. per kg.; from 1 to 5 c.cm. of the aqueous solution may be administered, the general plan of the treatment being an injection of 3 c.cm. twice weekly or 5 c.cm. once a week. These injections may be repeated until a total of 48 c.cm. (11 g.) is attained at the end of eight weeks. For the treatment of women slightly smaller quantities are given or the intervals are lengthened; the total amount in a course being 8 to 9 g. For the treatment of congenital syphilis in infants a less concentrated solution, which contains 9·4 per cent. of the compound, is provided by the manufacturers, and will be found more convenient than the concentrated solution designed for adults. The normal dose for infants is 1·5 cg. per kg. of body-weight; for an infant of 6 lb. weight an injection of 0·15 c.cm. of "infantile acetylarsan" is given; this is increased at four-day intervals until 0·45 c.cm. is reached; this amount is not exceeded in any further injection.

This preparation is eliminated rapidly, chiefly in the urine.

In the series of cases under consideration treatment with acetylarsan was carried out in 26 cases of early syphilis, of whom 17 were in the primary stage, and 9 in the secondary stage; of these cases 9 were women and 17 were men. Certain observations were made upon the spirillicidal, serological, and clinical effects of the subcutaneous injection of acetylarsan in these cases.

Effect of Acetylarsan on S. pallida.†

Observations have been made upon the period of survival after treatment of *S. pallida* in the secretion of the primary lesion in 11 of these cases. The results in each case indicate that no spirochætes survive in the superficial layers of the primary lesion after a period of 24 hours following the injection of acetylarsan. In certain cases the spirochætes were killed within 6 to 12 hours. Table I. indicates the results of the subcutaneous injection of 3 c.cm. (0·7 g.) of acetylarsan on the spirochætes in the secretion of the primary lesion. *S. pallida* were present in abundance in all

* Manufactured by the Laboratoire des Produits Usines du Rhone, 21, rue Jean Goujon, Paris.

† I am indebted to the sole agents, Messrs. Wilcox, Jozeau and Co., 15, Great St. Andrew-street, W.C. 2, for the free supply of a large proportion of the acetylarsan used in the treatment of these cases.

cases at the time of injection, except that few were noted in Case No. 2761.

TABLE I.

Case No.	Age of chancre.	Result of subsequent examination for *S. pallida*.
2669	One day.	None detected 8 or 30 hours later.
2780	Three days.	None detected 24 hours later.
2741	Seven days.	None detected 24 hours later.
2761	Eight weeks.	None detected 24 hours later.
3072	Four days.	A few distorted spirochætes seen 9 hours later.
3001	One week.	A few seen 6½ hours later, but none 12 hours later.
1797	Five weeks.	None detected 24 hours later (*a*).
1770	One week.	None detected 14 hours later.
3598	Four days.	A few seen 17 hours later, but none 24 hours later.
2993	Three weeks.	None detected 10½ hours later.
3122	One week.	None detected 24 hours later.

(*a*) Case No. 1797 received only 2 c.cm. (0·47 g.) of acetylarsan.

Effect of Treatment with Acetylarsan on the Wassermann Reaction.

The effect, as reflected by the result of subsequent Wassermann reactions, of a short course of treatment in all cases which attended long enough, is reported below. Fourteen out of the total of 26 cases are here considered. Of the remaining 12 seven ceased attending before completing the first course of treatment; in one case, on account of unavoidable irregularity of attendance, treatment with N.A.B. was substituted. Two cases suffered from toxic effects necessitating the cessation of treatment; two further cases are too recent to include in this section.

(*a*) *Sero-negative Cases.*—Three cases of sero-negative primary syphilis in this series were treated with acetylarsan; the result of W.R. after treatment of varying intensity is shown below.

CASE 2741.—Male aged 24. Attended on May 9th, 1927, with a primary chancre in which spirochætes were numerous; W.R. negative. He was treated from May 9th to July 18th with 17 injections of acetylarsan, a total of 12 g. W.R. negative on June 17th and again negative on August 5th, one month after end of course.

CASE 3001.—Male aged 33. Attended on July 28th, 1927, with two primary chancres of seven days' duration, containing many spirochætes. W.R. negative. From July 28th to Sept. 16th he received 11 injections of acetylarsan, a total of 7·8 g. W.R. negative on Sept. 8th, six weeks after the commencement of treatment.

CASE 2669. Male aged 58. Attended on April 23rd, 1927, with a primary chancre of one day's duration, in which numerous spirochætes were found. W.R. negative. After receiving only three injections of acetylarsan, a total of 2·25 g., he ceased attending for six weeks. On his return on June 14th W.R. negative. Further treatment with acetylarsan was given from June 14th to July 26th, during which period 13 injections of 3 c.cm. were given, a total of 9·2 g. On August 2nd W.R. still negative.

Into this group fall two additional cases of primary syphilis which, although the W.R. was not done at the time of first attendance, were most probably sero-negative; after a course of treatment with acetylarsan W.R was negative in both cases.

CASE 3072.—Male. Attended on August 12th with a primary chancre of one week's duration; *S. pallida* present. From August 12th to Oct. 3rd he received 10 injections of acetylarsan, totalling 7·08 g. W.R. negative on Sept. 15th, Oct. 31st, and Dec. 19th.

CASE 3068.—Male. Attended on August 11th with a chancre of one week's duration in which *Sp. pallida* were present. Injections of acetylarsan were given from August 11th to Oct. 3rd, a total of 11 g. On Nov. 10th W.R. was negative. From Nov. 17th to Dec. 23rd a second course of ten injections was given; W.R. again negative on Dec. 23rd.

(*b*) *Sero-positive Cases.*—In seven of the nine sero-positive cases a negative W.R. resulted after the initial course of treatment; in one of these signs of intolerance to acetylarsan made it necessary to continue the treatment with bismuth. The remaining two cases showed some serological improvement, but their reactions did not become negative. The histories of these cases are reported briefly.

(*a*) *Cases Resulting in a Negative W.R.*

CASE 2761.—Male. This case had a primary chancre with inguinal adenitis; there were no secondary manifestations; the W.R. was weakly positive. From June 2nd to August 6th eight injections of 3 c.cm. of acetylarsan were given; on August 17th W.R. was negative.

CASE 2779.—Male. Gave a history of a penile sore four months ago; presented specific ulceration of the fauces, alopecia, and general adenitis. W.R. positive. From May 26th to July 16th a course of 16 injections of acetylarsan, 3 c.cm., was administered, a total of 11 g. On August 17th W.R. was incompletely negative. A second course of 12 injections of 3 c.cm. of acetylarsan, totalling 8·4 g., was given from August 25th to Oct. 6th. W.R. negative on Oct. 3rd and on Nov. 7th.

CASE 3056.—Male, aged 30, with a primary chancre and a secondary eruption of 14 days' duration; W.R. strongly positive. From August 9th to Sept. 20th he received 13 injections of 3 c.cm. acetylarsan (9·2 g.). On Oct. 19th W.R. was negative.

CASE 1797.—Female. A case of primary and secondary syphilis; positive W.R. From May 16th to July 20th she was given 13 injections of acetylarsan, totalling 8·5 g. On July 27th and August 22nd W.R. was weakly positive. From August 26th to Dec. 6th 2 c.cm. of acetylarsan were administered on 16 occasions, a total of 7·52 g. On Dec. 20th W.R. was negative.

CASE 1798.—Female aged 26. A case of secondary syphilis with cutaneous eruptions and condylomata; W.R. strongly positive. From May 16th to June 7th she received 13 injections of acetylarsan (8·5 g.). On July 13th W.R. still strongly positive. From August 12th to Nov. 15th she was given 15 injections of 2 c.cm. of acetylarsan (9·0 g.). On Nov. 22nd W.R. negative.

CASE 1914.—Female aged 34. A case of secondary syphilis with a generalised eruption of a few days' duration; W.R. strongly positive. From July 23rd to August 29th seven injections of 3 c.cm. of acetylarsan were given. On account of irregular attendance only two further injections were given, one on Sept. 20th and one on Oct. 22nd. W.R. negative on Jan. 9th. The total amount of acetylarsan administered was 6·3 g.

In the following case acetylarsan was tolerated for a few injections only and treatment by bismuth was substituted; the combination of these two preparations had a favourable effect upon the result of the W.R., which became negative.

CASE 1840.—Female aged 51. A case of syphilis in the secondary stage with a strongly positive W.R. From June 8th to June 23rd she received four injections of acetylarsan (2·8 g.); toxic effects prevented the further use of this preparation, which was replaced by intramuscular injections of bismuth. From June 29th to Oct. 14th she was given grs. 48 of bismostab. W.R. negative on Oct. 26th and without further treatment was again negative on Dec. 21st.

(*b*) *Cases showing some Serological Improvement.*

CASE 1844.—Female. A case of secondary syphilis of a few weeks' duration with condylomata of the vulva and anus. The W.R. was strongly positive. She was treated from July 11th to August 22nd with 13 injections of acetylarsan (total 7·55 g.). On Sept. 19th W.R. was weakly positive; she did not attend again.

CASE 2834.—Male, aged 47. Had a primary chancre of unknown duration; W.R. strongly positive. From July 28th to Sept. 9th he received 16 injections of acetylarsan (total 11·2 g.). An erythema of arsenical origin prevented further treatment. On Dec. 17th W.R. was incompletely negative.

Effect of Acetylarsan on Clinical Lesions.

The rate of healing of the primary lesions following the administration of acetylarsan, as seen in Table II., compares favourably with that of salvarsan and its substitutes.

TABLE II.

Case No.	Age of primary lesion.	Time elapsing before healing.	No. of injections.	Total.
3001	7 days.	6 days.	2	6 c.cm.
2669	1 day.	4 ,,	1	3 ,,
1770	7 days.	5 ,,	1	3 ,,
1841	4 weeks.	20 ,,	2	6 ,,
1797	5 days.	7–10 ,,	2	6 ,,

On the secondary eruptions this preparation acts rapidly; in one case a roseolar eruption disappeared in six days after one injection of acetylarsan;

condylomata in two cases disappeared in 14 days, during which time four injections were given.

Toxicity.

The first member of the pentavalent group of organic arsenical compounds to be used in the therapeutics of syphilis was atoxyl. Following the use of this preparation toxic effects, among which optic atrophy was prominent, were frequent and severe. It has since been suggested by Fourneau,[1] who reinvestigated the chemical structure of atoxyl, that the majority of toxic effects previously attributed to this compound were due to impurities, chiefly sodium arsenite. However, it must be noted that ocular toxic effects may also follow the treatment of neurosyphilis with tryparsamide, another member of this series.

The experimental work of Voegtlin and Thompson [11] has demonstrated the rapid elimination of arsenic in the urine and fæces of rats, following the administration of compounds of the pentavalent group; in the majority of the compounds used by these two observers, the secretion of arsenic in the first 24 hours was between 80 and 90 per cent. They have also shown that in some of the pentavalent compounds the toxicity for rats is inversely proportional to the rate of elimination; no such correlation was found in the case of salvarsan or neosalvarsan. Voegtlin, Dyer, and Miller [12] have shown that the toxicity and parasiticidal action of the rapidly excreted pentavalent compounds is increased by ligation of the ureters and also of the bile-ducts in rats. They consider that the retention in the tissues is requisite for effective therapeutic value.

No detailed figures are available of the elimination rate of arsenic during the first 24 hours following the administration of acetylarsan. Laurent [8] reports that following the subcutaneous injection of oxyacetylaminophenylarsinate of sodium (sodium stovarsol) a pentavalent arsenical closely allied to acetylarsan, a considerable amount of arsenic was detected in the urine five hours later, and that elimination was complete at the end of 72 hours. Chattelier, Mahoux, and Valdigué [13] report that arsenic can be detected in the urine ten minutes after the administration of acetylarsan, and that elimination is practically complete within 36 hours.

In view of these observations one would expect acetylarsan, which is a member of this pentavalent group, to be less toxic than salvarsan or its substitutes in equal quantities. On account of the rapid elimination of the pentavalent compounds, however, it is found that the effective doses are higher than those of the arsenobenzenes, and the maximum quantity tolerated is also higher. The maximum dose of 3 c.cm. (1·18 g.) of acetylarsan is equivalent in arsenic content to 1·15 g. of N.A.B. Acetylarsan is usually given bi-weekly in doses of 3 c.cm., a weekly total of 6 c.cm., equivalent in arsenic content to 1·5 g. of N.A.B. In spite of the rapid elimination of acetylarsan it is difficult to avoid the suspicion that there may be more accumulation of arsenic in the tissues with acetylarsan than with N.A.B., and that toxic effects, especially of the late variety, may be more frequent. Comparison of the total quantity injected in a course of acetylarsan with that of a course of N.A.B. also has a bearing on the expectation of cumulative toxic effects. The maximum course of acetylarsan used in this series consisted of 16 injections of 3 c.cm. each, forming a total of 48 c.cm.; each c.cm. contains 0·236 g. of acetylarsan, the total arsenic content being 2·02 g., an amount which is administered in eight weeks. A course of N.A.B. of moderate intensity consists of a total of 5 g. administered over a period of 12 weeks and corresponds to 1 g. of arsenic. Thus the quantity of arsenic administered in this course of acetylarsan is double the amount of arsenic in an average course of N.A.B. and is given in a shorter period. The excretion of arsenic in the pentavalent group is almost totally via the kidneys (80–85 per cent.), whereas in the arsenobenzenes a considerable proportion is excreted in the fæces, in the case of salvarsan 82 per cent. and N.A.B. 33 per cent.

This would lead us to expect more frequent toxic effects on the renal tissue during treatment by a member of the pentavalent group; such effects were frequently met with in the use of atoxyl and arsacetin. In all 88 cases were treated for a variable period with acetylarsan; the cases in this series, which includes the 26 cases of early syphilis already discussed, are classified in Table III.

TABLE III.

Stage of syphilis.	Total.	Male.	Female.
Primary	17	14	3
Secondary	9	3	6
Tertiary	19	1	18
Latent	24	3	21
Congenital	19	—	19
Total	88	21	67

In these 88 patients, for whom the total number of injections was 854, toxic effects were met with in 14 cases—i.e., in 15·9 per cent. of cases and after 1·6 per cent. of injections. Table IV. indicates the incidence and severity of the toxic effects encountered, together with the sex distribution.

TABLE IV.

Cases.	Injections.	Reactions of slight degree.		
		With no interruption of treatment.	Temporary cessation of treatment.	Complete cessation of treatment.
Men, 21 ..	272	2	0	1
Women, 49	402	1	1	9
Children, 18	180	0	0	0
Total, 88 ..	854	3	1	10

All the toxic effects were slight. In three cases treatment was not interrupted and no further ill-effect occurred. In nine cases, all in women, treatment by acetylarsan was entirely stopped, not on account of the intensity of reactions, but in deference to the wishes of the patients.

Toleration.

No vasomotor reactions of the type known as "nitritoid crises" were met with, nor were there any examples of delayed arsenical poisoning giving rise to late jaundice or exfoliative dermatitis. It should be noted that no case has been under treatment for a longer period than nine months, and that it is still possible for either of these two complications to occur. In a series of 37 cases treated by Chatellier, Mahoux, and Valdigué [13] there were no cases of jaundice or exfoliative dermatitis; Poli-Garnier [14] treated 21 cases and Laurent [8] 66 cases without meeting either of these two complications. Lacapère [9] comments on the infrequency of reactions and has met with none of a serious character. Acetylarsan was administered to one pregnant patient in this series; it was well tolerated and no ill-effects were noted or complained of. Poli-Garnier [14] treated 21 cases during pregnancy with excellent results to the subsequent child; no toxic effects in the mother were reported.

This compound was extremely well borne by the children in the series; none were less than 12 months old and none were suffering from early or severe congenital syphilis. The age-distribution was as follows: age 1–3 years, 5 cases; age 3–5 years, 3 cases; age 5–10 years, 8 cases; age 10–13 years, 2 cases. Laurent [8] has reported favourably on the toleration of acetylarsan in four cases of congenital syphilis under the age of 1 month.

Reaction.

The reactions were diverse.

(1) The most frequent phenomenon was headache a few hours following the injection, associated with general malaise and in some cases a slight rise in

temperature. This occurred in four cases, in each case following the third or fourth injection.

(2) Vomiting a few hours after an injection occurred in four cases; in three it followed the second or third injection but in one case was not experienced until the sixth and was repeated after the ninth injection. Nausea and vertigo without vomiting were complained of in two additional cases.

(3) A complaint of feeling feverish and of malaise, both of transient duration, was made in two cases.

(4) A toxic erythematous eruption was seen in two cases; in one, a month after the end of the first course of 16 injections, a generalised erythema appeared which disappeared within seven days. A second case developed an erythema of the arms and neck on the day following the fourth injection; the eruption disappeared in four days.

(5) Albuminuria, which was anticipated, was experienced in one case only, a girl aged 20, in whom a trace of albumin was present three days after the eighth injection, but had disappeared 24 hours later. Albumin reappeared after the eleventh and thirteenth injections, but was small in amount and transient in duration on both occasions. Later a second course of 16 injections was tolerated without any return of albuminuria. In a case of congenital syphilis, in whom albuminuria had followed the previous administration of N.A.B., the toleration of acetylarsan was perfect.

(6) Jaundice of very slight degree and transient duration appeared in one case after the third injection; this had completely disappeared in 12 days.

(7) A Herxheimer reaction occurred once, in a case which presented a fading secondary syphilide; a few hours after the first injection the eruption again became bright in colour and subsequently faded rapidly. This case later suffered from recurring albuminuria and has already been referred to.

No toxic effects upon the nerve tissue were met with. Sudden amblyopia from effects on the optic nerve, as experienced with atoxyl and tryparsamide, was not seen in any case of this series, among which were three cases of tabes dorsalis, and one of syphilitic pachymeningitis.

Conclusions.

(1) The effect of acetylarsan on *S. pallida*, as estimated by their disappearance from the secretion of the primary lesions, is equal to that of the arsenobenzenes.

(2) The early serological effect, as far as can be judged in these few cases, compares favourably with that of the arsenobenzenes.

(3) Acetylarsan is more frequently followed by minor toxic effects than the arsenobenzenes; in this series no toxic effects of a serious nature were noted.

I wish to express my gratitude for the support received from all the medical officers of the Venereal Diseases Department, Guy's Hospital, during the observations of these cases.

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ABSORPTION OF BLOOD FROM THE PERITONEAL CAVITY.

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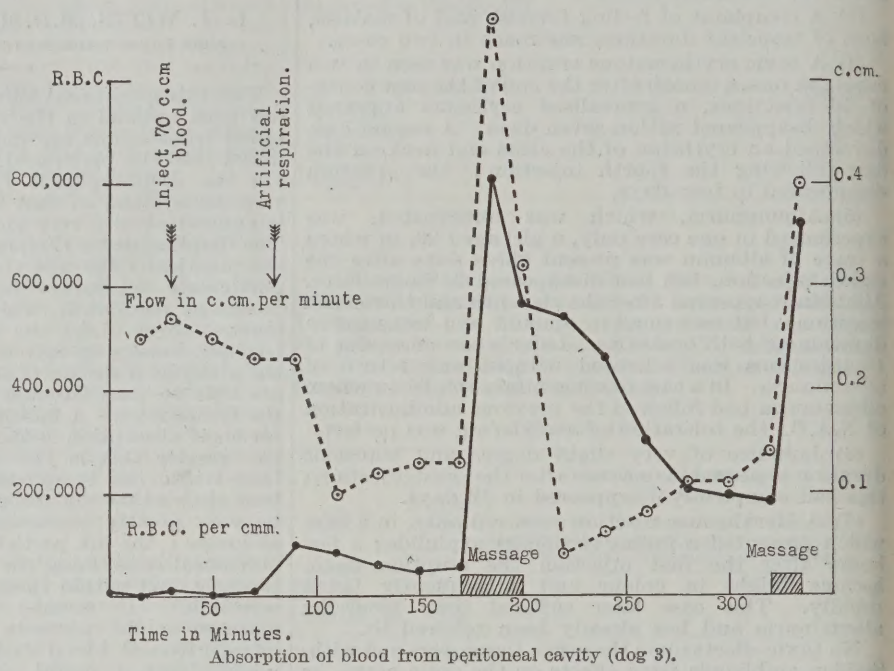
The intraperitoneal administration of whole blood has been applied in the treatment of infants where blood transfusions are indicated. Blood cells introduced into the peritoneal cavity are absorbed intact via the diaphragmatic lymphatics into the blood vascular system, so that an intraperitoneal injection is equivalent to a very slow intravenous transfusion. The diaphragmatic lymphatics and the thoracic duct are practically the sole channel for the absorption of particulate substances from the peritoneum. The basement membrane, which elsewhere forms a continuous sheet under the serous surface of the peritoneum, breaks up into a fenestrated membrane on the abdominal surface of the diaphragm, and particles are able to pass through the fenestrations to reach the lymphatics.[1] A factor of the utmost importance for their absorption is the intra-abdominal pressure; the greater this is the more rapidly are particles forced into the lymphatic system. It has already been shown that the absorption of a graphite ink may be very greatly accelerated by compression of the abdomen; the ink particles, which pass between the peritoneal cells lining the diaphragm, issue from the thoracic duct within three minutes of intraperitoneal injection.[2] It seemed probable, therefore, that massage might promote a quicker absorption of intraperitoneal blood and, if this were so, that it might form a useful adjunct to this procedure, especially in weak infants with atonic belly walls. To test its effect a series of experiments has been performed on dogs. The results of one experiment have been summarised in tabular form, and a diagram has been drawn of the rate of flow and the concentration of red cells in lymph from the thoracic duct of another.

Some five hours before the anæsthetic the dogs were given a meal containing fat, so that at the time of operation the thoracic duct would be filled with fatty lymph and easily visible. Chloralose, 0·1 g. per kg., was given intravenously after preliminary ether anæsthesia; one animal received morphia subcutaneously and paraldehyde by stomach-tube. In successful experiments the duct was located in the neighbourhood of the left external jugular and subclavian veins. In all cases a cannula was inserted directly into the duct. In many studies of thoracic duct lymph the cannula has been inserted into the external jugular vein near its junction with the subclavian, and the internal jugular, subclavian, and innominate veins have been tied off. This is often an easier operation than directly introducing a cannula into the duct, but it is difficult to be certain that all the small entering veins have been ligated. Lymph from the thoracic duct is of a creamy-white or serous appearance, depending on the amount of fat it contains. It clots readily and apparently more rapidly when blood is being absorbed from the peritoneal cavity. It contains normally only a very small number of red cells, and flows with a well-marked respiratory variation, welling up into the cannula with each expiration. During apnœa a small quantity of lymph is expelled at each cardiac pulsation. Increased respiratory movement accelerates the flow. Pressure with the hand on the abdomen causes a temporary increase. In the first three dogs the flow of lymph decreased soon after the experiment was begun. These dogs had received an intravenous injection of chloralose dissolved in about 50 to 100 c.cm. of normal saline, which might account for the large initial flow. In dog 4, which was anæsthetised with morphia subcutaneously and paraldehyde by stomach-tube, the flow was quite even, and about 130 c.cm. of lymph were collected during an experiment lasting nearly seven hours. All the lymph was collected and measured to estimate the flow, and samples were taken at regular intervals for blood

* With a grant from the Medical Research Council.
[1] W. G. MacCallum: Bull. Johns Hopkins Hosp., 1903, xiv., 105.
[2] H. Florey: Brit. Jour. Exp. Path., 1927, viii., 479.

counting. When a steady flow was established, 70 to 100 c.cm. of defibrinated dog's blood were injected into the peritoneal cavity. Preliminary experiments had shown that blood corpuscles from a different species were rapidly hæmolysed. For example, into each of two rabbits 20 c.cm. of hen's blood were injected intraperitoneally. Samples of blood were taken from the ear veins for several hours after the injection, but no nucleated red cells were seen. 100 c.cm. of sheep's blood were injected intraperitoneally into a dog; the red cell count in the lymph from the thoracic duct never exceeded 18,000 cells per c.mm., though the lymph became a bright transparent red. The colour suggested a count of at least half a million, and it was obvious that the majority of the red cells must have been hæmolysed. For this reason dog's blood was used in the experiments now reported. When the rate of absorption of red cells had reached a steady level, the abdomen was vigorously massaged for 30 minutes. The experiment was continued long enough for the recovery period to be studied.

No constant change in the rate of flow occurs after injection of blood into the peritoneal cavity. Red cells appear in the lymph 20–40 minutes after the injection and the colour of the lymph changes to pink or red. The time elapsing before a steady level is reached and the ultimate concentration of the red cells in the lymph depend apparently on the rate and depth of respiration. In dog 3 (weight 5 kg.) with shallow artificial respiration the flow was stabilised for one hour at 0·12 to 0·13 c.cm. per minute and 50,000 to 64,000 red cells per c.mm. In dog 4 (14 kg.), which developed rapid respiration after gr. $\frac{3}{4}$ of morphia, the flow varied over 80 minutes from 0·21 to 0·25 c.cm. per minute and the concentration of cells from 340,000 to 317,000 per c.mm. In dog 3 stabilisation of the rate and concentration began 100 minutes after the injection of the blood, in dog 4 160 minutes after injection. In dog 1 stabilisation had apparently just been reached at 0·38 c.cm. per minute and 155,000 cells per c.mm., but in these earlier experiments insufficient time was allowed. Similar levels were reached after recovery from the effect of massage.



Absorption of blood from peritoneal cavity (dog 3).

Result of Experiment on Dog 4.

Time in min.	R.B.C. per c.mm.	Rate of flow in c.cm. per min.	Respirations.	Time in min.	R.B.C. per c.mm.	Rate of flow in c.cm. per min.	Respirations
0	1,500	—	—	250	317,000	0·25	114
15	1,500	0·33	—		A.M.		
30	1,800	0·33	—		begun.		
	B.I.I.			265	463,000	1·13	—
50	2,400	0·30	28	280	420,000	0·93	—
70	22,000	0·23	—		A.M.		
90	70,000	0·23	28		ended.		
110	75,000	0·29	—	300	283,000	0·25	112
130	95,000	0·38	32	320	187,000	0·20	114
150	171,000	0·37	—	340	360,000	0·24	112
170	245,000	0·27	58	360	313,000	0·10	120
190	340,000	0·21	88	380	220,000	0·32	90
210	347,000	0·35	100	388	303,000	0·16	—
230	343,000	0·27	116				

B.I.I. = 80 c.cm. blood injected intraperitoneally.

A.M. = Abdominal massage.

Blood injected: 6,860,000 R.B.C. per c.mm. Blood in peritoneal cavity at conclusion of exp.: 9,000,000 R.B.C. per c.mm. Blood in diaphragmatic lymphatics at conclusion of exp.: 4,390,000 R.B.C. per c.mm.

An examination of the data from the experiments shows that absorption of blood from the peritoneal cavity is a relatively slow process. The rate of absorption would appear to be a resultant of the vigour of respiration and the tone of the abdominal muscles. We have worked with strong healthy dogs. Maximum absorption occurred in dog 4, which was a muscular animal weighing 14 kilos, exhibiting hyperpnœa for the greater part of the experiment. After the intraperitoneal injection of 80 c.cm. of blood containing 6,860,000 cells per c.mm., about 100 c.cm. of lymph, which had on an average less than 300,000 cells per c.mm., passed out of the thoracic duct—i.e., only one-sixteenth of the total number of corpuscles injected was absorbed in six hours. Thus, even with vigorous respiration and strong abdominal muscles, the absorption of the blood is a slow process. This must very greatly limit the value of intraperitoneal blood transfusion.

Massage has a considerable effect on the number of red cells and the rate of flow of the lymph. The flow may be increased fivefold and the cells reach from 500,000 to 800,000 per c.mm. Some part of this increased flow is due to the emptying of the receptaculum chyli and the lymphatics of the abdominal viscera by pressure. These initial sources are soon exhausted and the enhanced rate of flow is maintained by the increased intra-abdominal pressure. This promotes an increased absorption from the peritoneal cavity of both fluid and corpuscles as shown respectively by the rates of flow and the rise in the number of cells in the lymph. It must be emphasised that the massage was more forceful than could be applied to human patients, the abdomen being compressed firmly from 15 to 20 times a minute. After massage there is a temporary decrease in the flow, due to the filling of the lymph channels, while the concentration of the cells returns slowly to the pre-massage level.

The blood used for injection contained about 7,000,000 red cells per c.mm. Fluid obtained by puncture of the diaphragmatic lymphatics at the end of the experiments contained about 5,000,000 red cells per c.mm. The figures illustrate the extreme permeability of the diaphragmatic lymphatics for particulate material. These vessels absorb blood from the peritoneal cavity with only a small loss of cell concentration. Nevertheless, the fluid part of the blood is more easily absorbed from the abdomen, for, at the end of six hours, the number of red cells in the peritoneal cavity had risen from 7,000,000 to 9,000,000 per c.mm. Sabin has shown that this blood acts like a foreign body, the cells being taken up by the macrophages. A considerable amount of blood is

still present in the abdomen six hours after injection, and is a good medium for the growth of micro-organisms. In some survival experiments on rabbits fatal septic peritonitis followed the injection of blood into the peritoneal cavity when rigid aseptic precautions were not taken. The danger of sepsis after intraperitoneal injections of blood must be emphasised, as it is much greater than after intravenous transfusions. Levi injected blood intraperitoneally in mice in the ratio of 10 c.cm. of blood to 450 g. body-weight of the animal. He found that, though blood was still present in considerable quantity in the peritoneal cavity after six hours, it had been completely absorbed in 48 hours.[3]

Intraperitoneal transfusion therefore is unlikely to be of value in the treatment of shock, collapse, and hæmorrhage, where an immediate increase in blood volume is desired. If intravenous transfusion is not possible, the injection of diffusible fluids into the subcutaneous tissues or the peritoneal cavity would seem more likely to meet with success. Where blood transfusions are indicated in the treatment of anæmia and the patient is not in extremis, intraperitoneal transfusion is a rational procedure and its simplicity may counterbalance the delay in the effects.

Results obtained from the study of the movements of ink particles and red cells injected into the peritoneal cavity are susceptible of a wider application. Abolition of abdominal respiration in peritonitis must check the absorption of bacteria and their non-diffusible products. The importance of the diaphragmatic lymphatics is already realised in the Fowler position, and absorption might also be diminished by avoiding tight binders and other factors likely to increase intra-abdominal pressure. It is probable that throughout the whole organism the entrance of particulate substances into the lymphatics is facilitated by pressure, and experiments now being carried out indicate that muscular contractions, the movements of the hollow viscera, and rough handling may be of the very greatest importance in determining the spread of metastases from malignant growths.

Summary.

1. Blood injected into the peritoneal cavity is absorbed by the diaphragmatic lymphatics and enters the circulation by the thoracic duct. 2. In the dog absorption is very slow, only one-sixteenth of the corpuscles being absorbed after six hours; the plasma is absorbed more readily. 3. The rate of absorption depends on the intra-abdominal pressure, and absorption is most rapid with vigorous respiration and abdominal muscles of good tone. 4. Absorption is promoted by massage of the abdomen, but it is doubtful whether massage forcible enough to produce beneficial increase in absorption could safely be applied to patients. 5. Much blood remains for many hours in the abdominal cavity and there is danger of infection. 6. Abdominal transfusion of blood is not likely to compare in value with the intravenous route in the treatment of shock and collapse; it seems a rational form of treatment for more chronic forms of anæmia.

[3] D. Levi: Brit. Jour. Exp. Path., 1927, viii., 355.

THE FOUNDLING HOSPITAL SITE.—Difficulties have arisen regarding the proposed acquisition of a portion of the site of the Foundling Hospital by the Hospital for Sick Children in Great Ormond-street. Valuers appointed by the owners of the site and the governing body of the hospital were appointed to settle a fair price as between a willing seller and a willing buyer, but they have been unable to agree, and a proposal on behalf of the hospital that the matter should be referred to informal arbitration was not acceptable to the owners. A third valuer was then, by agreement, called in, who placed the market value at "probably not more than £450,000," but thought that, in view of the special advantages of the site for hospital purposes, the hospital would be justified in giving a maximum of £525,000. A firm offer of that amount was made but declined, and it would appear that, should there be no change in the situation, the building of blocks of flats on the site will begin almost immediately.

INDUCTION OF LABOUR WITH ANIMAL BLADDERS CONTAINING GLYCERINE.

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MOST methods of inducing labour depend upon the introduction of some irritating foreign body into the uterus, and although this must always entail some degree of uncertainty and carry with it a certain risk of infection, yet, in the present state of our knowledge as to the cause of the onset of labour, it is the most reliable method that we possess. Irritating fluids have been followed by such grave complications that they have been entirely given up. Solid foreign bodies, such as Krause's bougies, Horrocks's bag, or a stomach-tube are used in the majority of cases. In the method here described a sterile animal bladder is introduced into the uterus and subsequently partly filled with glycerine. This acts as a foreign body. A proportion of the glycerine passes out of the bladder into actual contact with the uterine wall, and there acts as a mildly irritating fluid.

Method.

The apparatus consists of a small metal tube about 1 in. in length and provided with a series of circular ridges on its outer surface; this is attached to a piece of rubber tubing about 6 in. in length. A stilette, provided with a flexible steel wire, protected at the tip by a small knob, can be passed through the rubber tubing, so as to project about 5 in. beyond the end of the metal tube. A sterile bladder is then tied with silk to the metal tube. The stilette serves to stretch the bladder so that it can be introduced into the uterus in the same way as a Krause's bougie, without any handling of the bladder itself, and without its touching the vaginal mucous membrane. The flexible stilette is immediately deflected if it comes against the presenting part in the lower uterine segment, and thus there is no danger of injury to the fœtus or the uterus during introduction.

When the bladder has been passed through the internal os the stilette is withdrawn, and pure sterile glycerine is injected into the animal bladder through the rubber tubing by means of a large syringe. A clamp is then screwed on to the tubing to prevent escape of the contents of the bladder. With a large bladder, between 100 and 200 c.cm. and with a small bladder between 50 and 100 c.cm., are injected. As the bladder, tubing, and stilette are introduced in the same way as a bougie, it is nearly always necessary to have the patient under an anæsthetic, in order to ensure proper exposure of the cervix and full aseptic technique.

The method was introduced in 1901 by Baumm.[1] In the instrument devised by him a long metal tube was used instead of the rubber, but this caused considerable discomfort, since it projected from the vulva and had to be retained until the onset of labour. This very much restricted the patient's movements. The rubber tubing with a metal connexion for tying on to the bladder causes practically no discomfort, and the patient can adopt any attitude without difficulty.

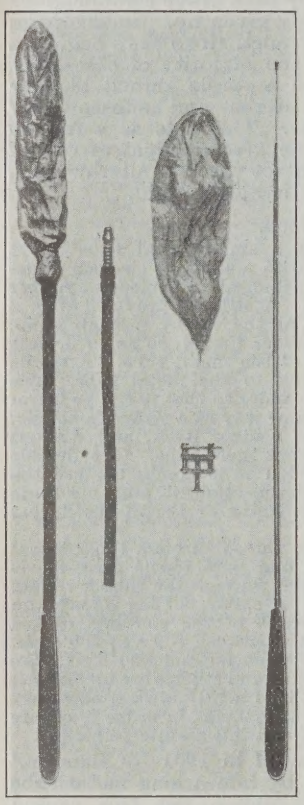
The animal bladders, ready sterilised and packed in alcohol, are obtainable in two sizes. Pig's bladders have a capacity of about 600 c.cm., sheep's bladders of about 150 c.cm. If a pig's bladder containing 150 c.cm. of glycerine is immersed in normal saline solution its contents will increase to about 500 c.cm. in 24 hours by the passage of fluid through the semi-permeable membrane. In addition to this a certain amount of glycerine passes out from the bladder into the surrounding saline. Such a bladder in the lower uterine segment gradually increases in size, so that the mechanical stimulus to labour increases in proportion to the time that the bladder remains in the uterus. The contact of a certain amount of free glycerine with the wall of the uterus still further stimulates the uterus to contract.

Possible Dangers.

Although the method was introduced over 25 years ago, it seems to have attracted little notice. Williamson,[2] in his review of the methods of induction, did not mention it, nor, as far as I am aware, is it noticed

by any other British writer on the subject. Recently it has been used by Scheffzek,[3] and by Sztehlo [4] in Germany, who speak well of the results obtained; and Druskin,[5] in America, considers it the best method of induction in the majority of cases. A sufficiently large number of cases have not yet been treated to warrant a definite opinion as to the dangers, but up to the present no serious dangers or difficulties have arisen. The two obvious ones are sepsis and the harmful effect of introducing glycerine into the uterus.

The danger of sepsis is present with any method depending upon the introduction of a foreign body into the uterus, but the technique employed enables animal bladders to be inserted with a minimum of possible contamination. The bladder and tubing, stretched by the stilette, can be introduced after the cervix has been exposed and steadied without coming into contact with the skin or the vaginal mucous membrane, and without being handled by the operator. It is certainly easier to introduce than a stomach-tube, and no more difficult than a bougie; furthermore, it occupies only the lower part of the uterus, and there is therefore no danger of separating the placenta, except when the latter is implanted in an unusually low position. The initial sterilisation of the bladder seems to offer no serious problem, since a similar problem has been successfully solved in the case of catgut used in surgical operations. A series of bacteriological tests on the bladders in use showed that they were sterile to all ordinary cultural tests.



Apparatus for induction of labour with animal bladders containing glycerine. The left-hand photograph shows the apparatus assembled and ready for introduction.

The incidence of puerperal morbidity has compared favourably with that following other operative methods of induction and, so far as it is possible to judge from a comparatively small number of cases, there seems to be no special danger of sepsis associated with the method.

There are two ways in which glycerine in the uterine cavity might conceivably do harm. In the first place, the mere local stimulation of glycerine in the uterus has, in some cases, been looked upon as an adequate cause of sudden death. Such accidents appear, however, to be unknown in ordinary obstetric practice, and, after all, stimulation of the uterus is the main object of all mechanical methods of induction. Furthermore, the injection of small quantities of glycerine is now widely used in the treatment of uterine infections, and apparently accidents do not occur. The danger of syncope can therefore be dismissed as purely theoretical.

There is no doubt that the absorption of large quantities of glycerine may cause considerable harm. An acute nephritis is said to follow large doses, and where glycerine has been injected between the uterine wall and the membranes with the object of inducing labour, severe toxic symptoms have resulted in a large proportion of cases. Where the glycerine is enclosed in an animal bladder, however, the danger of rapid absorption of a toxic dose of glycerine is avoided, since the fluid can only pass out very slowly, and never in sufficient quantity to cause poisonous symptoms. No cases have been met with in which there were any untoward signs suggestive of a toxic action.

Conclusion.

The method, therefore, seems to be free from any serious dangers, apart from those which must inevitably accompany any instrumental method of induction; in addition, the technique is simple and easily carried out. It is obviously unwise to draw conclusions from a small number of cases but, comparing the results with those obtained with bougies or the stomach-tube, the rapid onset of labour is a very striking feature of the animal bladder method. In some cases painful contractions have occurred as soon as the patient has recovered from the anæsthetic, and in the majority labour has definitely started within 12 hours. On the other hand, in one patient in whom the method was used there were no painful uterine contractions after four days; a stomach-tube was then inserted, but even then labour did not start for two days. In spite of an occasional case such as this (which may occur with any method) the bladder has given results which are sufficiently encouraging to warrant a more extensive trial.

References.—1. Baumm, P.: Zentralb. f. Gyn., 1901, xxv., 1059; 1902, xxvi., 1053. 2. Williamson, H.: Jour. Gynæc. Obstet. Brit. Emp., 1905, viii., 252. 3. Scheffzek, F. A.: Zentralb. f. Gyn., 1926, i., 2500. 4. Sztehlo, S.: Münch. med. Woch., 1926, lxxiii., 281. 5. Druskin, F.: Jour. Amer. Med. Assoc., 1924, lxxxii., 370.

Clinical and Laboratory Notes.

A NOTE ON THE TREATMENT OF ASCITES BY NOVASUROL AND AMMONIUM CHLORIDE.

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My attention was called to the value of this method of treatment on a visit to the Mayo Clinic last year, and recently I have had the opportunity of testing this in three cases of ascites of different ætiology with such striking results that I thought them worthy of publication.

In 1925 L. G. Rowntree, N. M. Keith, and C. W. Barrier,[1] working at the Mayo Clinic, published a paper on Novasurol in the Treatment of Ascites in Hepatic Disease, and in the same year Keith, Barrier, and M. Whelan [2] published a paper on the Diuretic Action of Novasurol and Ammonium Chloride in Cases of Nephritis with Œdema. Previously, in 1920, Paul Saxl and Robert Heilig [3] had called attention to the efficacy of this method of treatment in cardiac dropsy. Novasurol is a double salt of sodium mercurichlor-phenyl oxyacetate with diethylbarbituric acid, and contains 33·9 per cent. of mercury. It is soluble in water and can be given by intravenous or intramuscular injections. It may be given in doses up to 2 c.cm. intramuscularly at intervals of three to seven days. Its tolerance should first be tested by giving 0·5 c.cm. intramuscularly.

Ammonium chloride is given by the mouth in divided doses up to grs. 150 in the 24 hours. I have found that 1 c.cm. of novasurol, followed by grs. 120 of ammonium chloride daily, was efficacious in producing marked diuresis. Novasurol alone or ammonium

[1] Jour. Amer. Med. Assoc., 1925, lxxxv., 1187.
[2] Ibid., p. 799.
[3] Wien. klin. Woch., 1920, xxxiii., 943.

chloride alone do not answer so well. The following are notes of the cases treated.

CASE 1.—A man, aged 54, was admitted to St. Mary's Hospital on April 23rd, 1928, with œdema of the legs and ascites.

History.—Noticed swelling of feet about six weeks ago followed by swelling of abdomen. In 1919 had operation for subphrenic abscess. Since then has done no work but has kept well. For the last nine years has drunk eight or nine small bottles of Guinness's stout every day.

On admission œdema of legs, ascites. Heart normal, Wassermann reaction negative. Passing very little urine, 16 to 20 oz. Girth, 36 in. Abdomen distended and tense, liver cannot be palpated. April 25th: Put on ammonium chloride grs. 15 every six hours; no result. 27th: Given 1 c.cm. of novasurol, followed by grs. 120 ammonium chloride in the 24 hours. Urine output rose to 66 oz. next day. The ammonium chloride was continued and the output of urine maintained. On the 30th œdema of legs had gone, but there was still some ascites, so another 1 c.cm. of novasurol was given intramuscularly. In the next 24 hours the urine output rose to 96 oz., all the ascites disappeared, and the girth was 32 in. There was no recurrence of ascites, and he was discharged a week later.

CASE 2.—A man, aged 51, was admitted to St. Mary's Hospital on April 6th, 1928, with œdema of legs and scrotum and ascites. The abdomen was tapped on April 10th and 19 pints of clear fluid were removed. Liver enlarged and hard, reaching down to umbilicus. Passed 14 to 24 oz. of urine. Œdema of legs and scrotum not much relieved by tapping. Fluid began to accumulate again in peritoneal cavity. April 23rd: 1 c.cm. of novasurol given intramuscularly and grs. 60 of ammonium chloride given by mouth next day. Urine output rose to 54 oz. 27th: 1 c.cm. of novasurol given as before, followed by grs. 120 of ammonium chloride in next 24 hours. Urine output rose to 112 oz. 30th: Same treatment. Urine output rose to 168 oz. All the œdema and ascites completely disappeared and the patient left the hospital feeling well.

This patient first attended for ascites in 1923 and, after several tappings at short intervals, had a Talma-Morrison operation performed by Prof. C. A. Pannett. After this he kept well till November, 1924, 15 months later, when he came in to be tapped again. He had been tapped at varying intervals since 10, 7, and 6 months, and recently at shorter intervals. He is not an alcoholic and the Wassermann test has been negative twice. The spleen is not enlarged, but at the operation the liver was very much enlarged, smooth, and firm. The ætiology of the condition remains obscure. He has since returned with recurrence of ascites, which again yielded to treatment by novasurol and ammonium chloride, when he passed 200 oz. of urine in 26 hours.

CASE 3.—A man, aged 44, was admitted to St. Mary's Hospital on April 23rd with œdema of legs and lumbar region and ascites. The abdomen was distended, the liver not felt. Heart normal, blood pressure 130/85. Incontinence of urine, which has been present for ten years. Urine spec. grav. 1008, alkaline, albumin under 1 per cent. (Esbach) and pus present; about 24 oz. daily. Œdema of legs began in February of this year. Wassermann reaction negative. April 27th: Given 1 c.cm. of novasurol, followed by grs. 120 of ammonium chloride in the 24 hours each day. Urinary output rose to 76 oz. on April 28th, and to 84 oz. on the following day. 30th: 1 c.cm. of novasurol again given and ammonium chloride continued. Output of urine rose next day to 128 oz., and was 84 oz. the following day. The whole of the œdema and ascites had now completely disappeared. The urinary output has since continued to be high, averaging from 40 to 60 oz. or more, and there has been no return of œdema.

The treatment of ascites by repeated tappings or ordinary diuretics is admittedly unsatisfactory. The explanation of the remarkable results obtained by the administration of novasurol and ammonium chloride is not clear. Rowntree, in addition, restricted the intake of water and salt, but this does not appear to be essential. Keith and Whelan came to the conclusion that the action of these diuretics was not limited to the kidney, but that extrarenal factors play an important part, and it is obvious that the transference of the fluid from the peritoneal cavity or the tissues to the blood stream is the primary difficulty and is essential for a satisfactory result.

Dr. George Curtis, of Chicago, in the Mayo Foundation Lecture this year on the Action of the Specific Diuretics,[4] described some experiments he had made on rabbits with the diuretic euphyllin. He found that during diuresis electrolytes form the greater part of the solids excreted in the urine, and that the chlorides calculated as sodium chloride predominate. The sodium chloride content of the blood also rises. He concluded that under the influence of the specific diuretics permeability changes are initiated in the tissues, resulting in a rapid passage of electrolytes, principally chlorides, into the blood stream from the tissues. These stimulate the kidney and pass into the urine in large amounts. He found that when diuresis did not occur the marked increase in chloride excretion did not take place.

[4] Proceedings of the Staff Meetings of the Mayo Clinic, April, 1928.

A CASE OF UNIVERSAL SUBCUTANEOUS SURGICAL EMPHYSEMA

ASSOCIATED WITH SPONTANEOUS PNEUMOTHORAX.

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UNIVERSAL subcutaneous emphysema associated with spontaneous pneumothorax is sufficiently rare to warrant description.

The patient, male, aged 19, was admitted to the Warwickshire King Edward VII. Memorial Sanatorium on April 2nd, 1928, with the signs and symptoms of advanced pulmonary tuberculosis in both lungs. He was rapidly going downhill, when at about 7 P.M. on April 12th he developed a very acute pain in the left axillary region. When seen soon after his breathing was rapid and distressed, and there was fairly well-marked cyanosis of the face with a frequent hacking and unproductive cough. The temperature was subnormal (collapse) and the pulse extremely rapid and almost imperceptible. The patient looked very distressed. A very superficial examination of the chest showed that the left side was hyper-resonant to percussion, and the apex-beat about an inch inside the right nipple line. The breath sounds on the left side were almost lost and of amphoric character, while on the right side numerous râles could be heard. A diagnosis of spontaneous pneumothorax was made.

It was decided to introduce a needle into the pleural cavity in order to allow air to escape, and thus reduce the intrapleural pressure. After a preliminary injection of gr. ¼ morphia with gr. 1/100 atropine, a pneumothorax needle was introduced into the pleural cavity through the fifth left intercostal space in the axillary line. The needle was connected by means of a piece of rubber tubing to the manometer of an artificial pneumothorax apparatus. The manometer showed an excursion of 0+10 cm. water with respiration, thus demonstrating that the endopleural pressure was definitely raised. The end of the tube which was attached to the manometer was disconnected and placed in a bowl of water. Immediately bubbles of air began to rise in the water, thus showing that air was passing out of the pleural space. The relief to the patient, as a result of this small operation, was almost immediate. The pulse became stronger and less rapid, and the breathing not so laboured. After a few minutes the intrapleural pressure was again taken and found to be −5+5 cm. water (mean atmospheric), as against the initial pressure of 0+10 cm. water. The relief to the patient was so striking that we decided to leave the needle in the pleural cavity over night, the needle being connected to the rubber tubing, and prevented from falling out by fastening it to the chest wall by means of adhesive plaster.

The next morning the patient had considerably improved. The intrapleural pressure was still −5+5 cm. water, and air was still passing out of the pleural cavity as fast as it came in. He had a slight subcutaneous surgical emphysema of the left chest wall around the site of the needle. That same evening the emphysema had spread all over his left chest wall and up the left side of his neck and face. The following morning he had the facies similar to that of a case of severe chronic parenchymatous nephritis. His face and neck were enormously swollen on both sides, and his eyelids were half closed. The emphysema extended upwards as far as his forehead. There was no emphysema of the scalp. He had subcutaneous emphysema of the chest wall on both sides, both front and back, likewise the abdominal wall, upper limb as far as the carpo-metacarpal joints, and the left lower limb as far as the ankle were all emphysematous, while in the right lower limb it extended as far as

the knee-joint. The whole back all the way down presented crackling emphysema.

The patient was severely distressed and his breathing very shallow. As death seemed not far off, the needle was removed from the pleural cavity. He died in the early hours of the next morning (April 14th).

At the autopsy performed by Dr. F. R. Heaf both lungs were found to be extensively diseased with a broncho-pneumonic infiltration and a large cavity at each apex. There was a perforation of the visceral pleura of the left lung about 3 in. from the extreme apex, 5 mm. in diameter, and extending 7 mm. into the lung tissue. The perforation was in all probability due to rupture of a superficial caseous focus through the visceral pleura. A very dense adhesion attached to the visceral pleura near the site of the rupture, by tension of the lung tissue, probably played some part in causing the perforation.

THE EFFECT OF THE PROLONGED USE OF INSULIN ON THE SUBCUTANEOUS TISSUES.

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CHEMICAL PATHOLOGIST, KING'S COLLEGE HOSPITAL.

Various writers have dealt with unusual effects that may occur in the subcutaneous tissues as the result of insulin injections. These are: (1) irritative inflammatory reactions [1] which occasionally occur at the commencement of treatment, and (2) areas of local fat necrosis [2] resulting from the continued injection of insulin into one small area. The first type of reaction may be temporarily troublesome and cannot be avoided, as it is an idiosyncrasy, probably of an allergic nature, but it very rarely persists more than a few weeks. Local fat atrophy only occurs when the injections are persisted with too frequently and for too long a time in one place, and never occurs if the patient is warned to distribute the doses properly. The atrophic areas may fill up again normally with fat when the injections are inserted in another place.[3] In most insulin cases, however, these effects are not seen, and it has seemed of interest to examine the usual effects of insulin properly administered in two doses a day continuously since its introduction five years ago. This has been done in a male patient of 35 by radiography and microscopy of various pieces of skin and subcutaneous fat.

Immediate Effects.

All the injections have been administered deeply into the subcutaneous tissues, just superficial to the deep fascia rather than immediately under the true skin. In this way pain is minimised. Indeed, if the needle is a fine one, so that it is possible to get in between the pain nerve terminals, the prick is not felt at all. The acid reaction of the insulin, however, always causes some stinging when injected into fresh tissues, but this disappears entirely when the tissues are accustomed to insulin by a few doses. Thus the injection may be entirely painless. This stinging in newly used tissues often makes the patient hesitate to shift the injection to another area after a week or two, and in this way fat atrophy may occur. Localised subcutaneous œdema always follows the injection and lasts 18–36 hours before subsiding. Intradermic injections are always painful and produce a pigskin appearance of the skin as well as excessive stinging, and I have seen aseptic necrosis. Injections into muscle cause no initial stinging, but are apt to be painful for the next 24 hours when the muscle is used. There is evidence that they may produce local necrosis of the muscle.

Permanent Effects.

Three different areas of skin were examined by palpation, by excision of the skin and subcutaneous fat for microscopy, and by X rays. They were: (1) an area from the thigh which had never been used; (2) an area from the left forearm which had received no injections for three years but had been almost continuously used during the preceding two years; and (3) an area of the thigh which had been frequently used lately.

On palpation the skin and subcutaneous tissue of the left forearm felt considerably thicker and more fibrous than the part of the arm which had never been used. In making the incision the knife met with considerable fibrous resistance, which was still more noticeable in the area frequently and recently used, where œdema was also present. It was noticeable (painfully so!) that these tissues could not be anæsthetised with novocaine injected into the surrounding areas.

Microscopy.—Dr. E. ff. Creed has kindly furnished the following report:—

"The histological changes are comparatively slight. The sections from the arm (used three years before) show fibrous strands extending down from the corium into the subcutaneous fat. The strands divide up the fat into coarse lobules. Infiltrating the fibrous tissue, especially in the neighbourhood of the vessels, are lymphocytes and histiocytes with a few plasma cells and one or two eosinophiles (more of the latter are present than in the section of the normal skin). The sections from the hip do not show the down-growth of fibrous trabeculæ, but there is some infiltration in the neighbourhood of the vessels similar to that seen in the arm sections."

Radiological examination with a soft tube showed very little change in the subcutaneous tissues, but suggested a slight increase in fibrous tissue just superficial to the fascia lata of the thigh. Another patient, however, in whom the injections had been less widely distributed, showed considerable increase in fibrous tissue and some suggestion of rarefaction in the muscle immediately underlying the fibrous fascia lata. This patient has always pushed in the needle at right angles to the skin, as deep as it would go, as she found that this minimised the stinging. It is, therefore, very probable that many of the injections reached the muscles and caused a slight rarefaction. Bowie and Robinson,[4] in experiments on rabbits, showed that whereas insulin caused only some œdema in the subcutaneous tissues and no cellular infiltration, it produced necrosis and rarefaction with a cellular infiltration in the muscles. As far as the evidence in this case goes, the same appears to happen in human muscle.

Summary.

The effect of insulin injections, properly distributed in the subcutaneous tissues, is very little over many years. The temporary effect is always an œdematous exudate, but, when this passes off in 18–36 hours, no permanent effect is left, except the tendency to slight fibrosis in the subcutaneous fat with some increase in the connective tissue cells. Intradermic and intramuscular injections are inadvisable and may produce focal necrosis. Prolonged injections into a limited area may produce marked fibrosis and fat atrophy.

I am indebted to Mr. H. C. Edwards, F.R.C.S., for the excision of the skin areas, and to Dr. Graham Hodgson for the radiological examinations.

References.—1. Lawrence, R. D.: The Lancet, 1925, i., 1125. 2. Carmichael, E. A., and Graham, G.: Ibid., March 24th, p. 601. 3. Chapman, P. D. H.: Ibid., March 31st, p. 674. 4. Bowie, D. J., and Robinson, W. L.: Jour. Lab. and Clin. Med., 1923, viii., 569.

* Working on insulin for the Medical Research Council.

Lord Mayor Treloar Cripples' Hospital.—The cost of keeping in order the many wooden buildings of this institution at Alton, in Hampshire, has become so heavy in consequence of their increasing age that it has been decided, as means permit, to replace them by permanent structures. The hospital will come of age in 1929, and most of the buildings were erected nearly 20 years ago. The cost of repairs at present exceeds £5 per bed per annum.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF EPIDEMIOLOGY.

A MEETING of this Section was held on June 22nd, Dr. S. MONCKTON COPEMAN, F.R.S., the President, being in the chair. Dr. J. A. GLOVER communicated Some Observations on

Nasopharyngeal Epidemics in Public Schools.

He declared that over 80 per cent. of school-sickness—judged either by the actual number of cases or by the time lost—was transmitted by "droplet" infection, otherwise termed spread by nasopharyngeal ejections. He doubted whether the importance of nose-to-nose and mouth-to-mouth infection was even yet realised. The public schools of England offered a unique field for epidemiological study, yet, except by a few observers, the material had not been used to good advantage. Surg.-Commander S. F. Dudley, in two reports on the Royal Naval School at Greenwich, published by the Medical Research Council, made a most important contribution to epidemiology, and the work of Clement Dukes, at Rugby, was classical. Dukes showed, in 1905, that the number of cases of infectious disease was increasing, the increase being doubtless due to greater care in the homes in preventing such diseases, so that the boys or girls reached the public school unprotected by previous attacks. Part of the increase, however, was apparent only. The absence of scarlet fever in the great public schools was remarkable, especially in view of the fact that the tonsillitis at a particular school investigated was mostly due to infection by hæmolytic streptococci of the scarlatinal type. Since the 1918 epidemic, said Dr. Glover, there had been a greater prevalence of influenza; more boys were now sent to public schools, with a resultant over-crowding of class-rooms and dormitories. A possible factor, too, was the greater attention now being paid to what could be termed "febricula." Influenza had occurred in epidemic form in three of four years in Lent term, and once there was so much diarrhœa and vomiting that the term "gastric influenza" was justified. In four years the admissions to the infirmary of one of our public schools were: influenza, 28 per cent.; feverish cold, chill, pyrexia, and bronchial catarrh, 15 per cent.; tonsillitis, 20 per cent. of all admissions. Dr. Glover said that the character of the epidemic was a good guide in distinguishing whether or not an epidemic of febrile catarrh was influenza, and gave a better indication even than the clinical features of the actual cases. True influenza epidemics were of an explosive character. High attack-rates in schools were very common; in certain houses this rate was as high as 95 per cent. There seemed to be little correspondence between the height of the attack-rate in an influenza epidemic and the prevalence of complications—i.e., such as pneumonia and otitis media; the latter, indeed, were secondary epidemics, which might or might not occur. At Eton, out of 717 uninoculated boys, 294 were attacked by influenza in an epidemic, while of 302 inoculated 149 were attacked. At Haileybury, out of 315 uninoculated 67 were attacked, and of the 215 inoculated 34 were attacked. L. R. Lemprière had said that true influenza was beyond the control of the school medical officer, but this should not apply to that persistent condition in schools which went under the name of pyrexia of unknown origin (P.U.O.). In the great influenza epidemics of 1918 and 1919 there seemed to be evidence that a previous attack did confer some immunity against one or more of the subsequent waves of infection. Thus, at King's College School, Cambridge, where 100 per cent. of the boys were attacked in the epidemic of July, 1918, none were attacked in the epidemic in the November of the same year, though 58 per cent. of them were again subjects of the disease in the following March. A similar sequence was noted at Rugby School. In 1922, Dr. A. L. Simey considered that partial and temporary immunity was conferred by an attack of febricula against influenza, and by influenza against febricula. It would be of interest to know whether Dr. Simey still thought so, since Dr. Glover's own view was that no immunity was so conferred, rather that the reverse was the case. It seemed to be the general opinion that epidemics of influenza could not be prevented by vaccines; if these were to be used at all, it should be before the danger period—i.e., not later than November. With regard to prophylactic measures other than vaccines, Dr. Glover strongly believed that more intensive measures at the beginning of each Lent term would well repay school authorities, and he quoted striking cases of mischief resulting from boys having returned to school from home while in a highly infectious state. No work, he thought, should be done in school before breakfast in January, February, and perhaps March, though he had no objection to a sprint in the open-air. He was sceptical as to the efficacy of nasal douching and spraying, though at one school their use seemed to have been definitely successful. As to baths, a proper skin reaction was one of the great defensive ramparts of the body, and hence a warm bath or shower should always be immediately followed by a cold shower, to tone up the skin. Diet was also important, especially in respect of oranges, vegetables, salads, and watercress.

He believed that by far the chief communication of infection of boy to boy took place in the school dormitories, though in one school epidemic investigated the mischief seemed to have been wrought in one of the common rooms which was used by the boys for a variety of purposes, mostly with the windows closed. He has seen a good deal of over-crowding of beds in large public schools. There should always be at least 3 ft. of space between the edges of separate beds, and an open space of 700 cu. ft. for each occupant. Not only cross, but adequate through ventilation was essential. One epidemic of persistent sore-throat investigated by the speaker was apparently due to a non-hæmolytic form of strepto-coccus; possibly there was superadded sanitary defect. Only Grade A milk should be used; failing that, all milk used in schools should be pasteurised.

In conclusion, Dr. Glover suggested that medical officers of schools might profitably investigate a number of matters which still remained unexplored, with the view of increasing good health at the schools. Some of these were as follows: The epidemiology and bacteriology of otitis media in relation to influenza and febricula; the relative sickness-rates of boys' and girls' schools, and of day and boarding-schools; the incidence of droplet infections upon children whose tonsils had been enucleated and adenoids removed, compared with that in children who had not been so dealt with; the use of the uniform system of medical record adopted by the Association of School Medical Officers; the methods of encouraging the school-boys and girls to keep fit; the possibilities of intensive prophylaxis during the first half of the Lent term.

Discussion.

The PRESIDENT said he was struck by the large proportion of cases of disease which occurred in schools as a result of "droplet" infection. He was also concerned about the remarks as to the efficacy of the vaccine treatment of influenza. Soon after the war he had been entrusted by the Ministry of Health with an intensive campaign in the Universities of Oxford and Cambridge, because it was feared there would be a large incidence of influenza between the ages of 18 and 25. He was allowed five minutes' talk to the men just before their lunch, and, as a result, over 5000 inoculations against the disease were performed in these universities. He did not know the exact statistical results, but he hoped they

were better than those which Dr. Glover considered usual. It would be agreed that school dormitories were the most likely places for infection to occur, especially if the ventilation was bad. However, one outbreak of diphtheria which he had studied, had clearly originated and been extended in one of the class-rooms, the cases having occurred centrifugally around one in the room. Dietary in schools was a very important matter.

Surg.-Commander DUDLEY expressed his general agreement with Dr. Glover. It was true that the minor infections in a school—tonsillitis, catarrh, influenza—constituted 75 per cent. of the whole, but the time lost was not so great as that wasted by the acute specific diseases. Whatever measures, such as vaccines, might be adopted in schools to counteract or prevent the minor ailments, he believed these were sure to occur. As to the question whether acute disease occurred in a school mostly among residents or non-residents, the experience at Greenwich School was of interest. This school took both residents and day-boys, all the boys playing the same games and attending the same classes. In three years one in every three of the residents had diphtheria or scarlet fever, but not one of the day-boys had either disease in the same period.

Dr. G. E. FRIEND said that at his school the admissions to the infirmary of cases of obscure pyrexia, tonsillitis, and febricula—excluding other droplet infections—amounted to 36 per cent. of the whole. He felt convinced that no preventive measures in schools would make a great difference to incidence, but the lines recommended by Dr. Glover were undoubtedly sound. Mass inoculations of vaccine to large numbers of boys was a matter to be approached with great caution, though once he had done inoculation to 65 per cent. of the boys, and another time 90 per cent. The insistence on the production of a certificate of good health before a boy was allowed to return to school, as at Rugby and Haileybury, resulted in the absence, through colds, of a considerable number of boys at the beginning of term. At Christ's Hospital he had proved that infection did not occur in the dormitories, where the spacing in the new building was all that was required. Epidemics spread mainly through the class-rooms.

Captain R. M. MAY spoke of the difficulties of attempting to carry out ideal methods for improving the health in schools. For the spread of infection he blamed chiefly the dormitories. An intensive campaign at his school against sore-throat, catarrh, and tonsillitis, during the last four years, with an expert to treat or remove tonsils and adenoids, had led to a great diminution of those affections.

Prof. MAJOR GREENWOOD said that the incidence of second attacks of influenza in schools was a matter of interest. The report of the Ministry of Health on the influenza epidemic, which dealt with such large figures that random errors were practically negligible, showed enormous differences in the proportions of boys who were attacked in the summer and again in the autumn. It seemed to point to different immunising qualities of different strains of organisms. The great point to remember when dealing with closed communities was that so long as non-immunised individuals were introduced to the herd, no measure of prophylaxis was likely to be effective as a preventive. Long series of observations on large numbers was needed, such as could be made in mice, to justify satisfactory epidemiological conclusions.

Dr. DALRYMPLE-CHAMPNEYS spoke of his visits of inspection to the chief public schools of the country. He said he found overcrowding in dormitories very common, and sometimes the architect was responsible for the best of the space not having been utilised in the dormitories. He pleaded for a much more generous cubic space in dormitories and a greater space between beds.

Reviews and Notices of Books.

PSYCHOLOGY.

Directing Mental Energy. By Dr. F. A. P. AVELING, M.C., Ph.D., Lecturer in Psychology, King's College, London. University of London Press. 1927. 8*s.* 6*d.*

Dr. Aveling's study of the directing of mental energy gives in a concentrated form all the work that has been recently done on the application of psychology to industry and occupation. It succeeds in bringing home to us what every observer of sociological phenomena must have noted, the lamentable wastage due to psychological maladjustments of members of a complex social organisation. The book is really a treatise on economic psychology. General psychology demonstrates the process of the human mind, and economics deals with the phenomena of exchange of commodities and the way in which the human unit is concerned in these interchanges. In the past psychology was too aloof from affairs of the world to concern itself with the manifold ways in which the human mind affects and is affected by economic situations. Economists in their turn were apt to regard the human subject as an unchanging unit in economic affairs—a mere shuttle which carries the thread of industrial activity across the loom of the economic state, carded with the pattern of economic laws. When efficiency became the cry of the industrialist every effort was made to eliminate superfluous processes, and it was soon found that it was not the processes alone that were important, but the way in which man was affected by them. Output was found to be influenced by the physical and mental fatigue of the workers, and the worker himself was frequently found to be psychologically unsuited to certain forms of work. Thence grew up the science of industrial psychology and vocational testing. Dr. Aveling deals with the root problems of both these departments; and, although the book is comparatively small, it discusses very fully the details of methods of testing.

Dr. Aveling has given us a readable work, which can be studied by medical men with profit—since practitioners, as well as mental specialists, are every day meeting conditions of disturbed mental and physical functions which can only be understood if the economic situation of the patient and his reactions to such situation are taken fully into account.

Mind: Lectures delivered at King's College, University of London, in various subjects. Edited by R. J. S. MCDOWALL, D.Sc., M.B. London: Longmans, Green and Co. 1927. Pp. 316. 8*s.* 6*d.*

THESE essays, bound together by a single purpose—that is, the establishment of the concept of mind as a governing principle in the sciences—are yet entirely independent of one another in that each writer, a specialist in his own department, has thought out his thesis without collaborating with the others. While Prof. Julian S. Huxley attacks the problem of biology from a psychological evolutionary point of view—seeing in mind and value the final emergents, Prof. R. J. S. McDowall sees physiology frankly as a mechanist. Dr. F. A. P. Aveling's paper is designed to demonstrate the nature of the laws of psychophysics, and Dr. J. A. Hadfield finds in psychotherapy and the phenomena of psychopathology definite evidence of mental agency as potent as the activities of the physical world. Prof. Linderman orientates the subject in dealing with physics to the realm of logic and shocks our self-complacency by stating that physics is not dogmatic. but takes its stand as the basis of working categories rather than ultimates, the nature of which can never be assured. Thus, whatever indefinables we use—a stable world of physics can be built—whatever set we choose is purely a mental bias. Prof. Linderman's essay is one of scientific scepticism and

perhaps the best in the book. The other essays are on philosophy by W. R. Matthews, education by Dover Wilson, æsthetics by R. G. Collingwood, anthropology by C. G. Seligman, and sociology by Prof. L. T. Hobhouse. Prof. Seligman seems to be influenced by the extravert-introvert distinction in racial types, while Prof. Hobhouse epitomises his well-known views on the importance of mind in social evolution. Altogether an interesting collection of essays.

Psychology of Character. By A. A. ROBACK. London: Kegan Paul and Co. 1927. Pp. 566. 25*s*.

FROM time immemorial the study of character has occupied the minds of philosophers and moralists. With each advance in scientific knowledge of man in his mental, moral, and physical aspect the study has been influenced by the progress made and by the theories advanced to explain the nature and varieties of human character.

Dr. Roback's erudite and informative work is an attempt to deal with all the material bearing upon the subject of character, and to judge from his references he seems to have explored relevant sources of philosophy from the Talmud to the latest excursions of the Gestalt theme of Germany. The author is to be congratulated on having kept his head above the flood of literature and on keeping a keen outlook for any land upon which the scientist may set an assured foot. Some philosophers are impressed by the influence of physical phenomena on character, others seek, by dividing the human mind rigidly into emotional and intellectual aspects, to explore its machinery. These theories do not exclude one another, but until they are more closely correlated, the establishment of an orderly edifice of a science of character will not be possible.

FOODS: THEIR COMPOSITION AND ANALYSIS.

Seventh edition. By WYNTER BLYTH and HENRY EDWARD COX. London: Charles Griffin and Co., Ltd. 1927. Pp. xxv.+619. 38*s*.

THOSE familiar with Dr. Cox's book on Chemical Analysis of Foods will welcome his association with the seventh edition of this classical work. The characteristics of the original book have been maintained, some chapters have been rewritten, many new sections written, and some obsolete matter omitted. The book is divided into nine parts. Part I., which deals with the history of adulteration, differs only from the text of the last edition in that it is brought up to date and includes: the Milk (Special Designations) Order, 1923, the Public Health (Preservatives, &c., in Food) Regulations, 1925 and 1926, and the Milk and Dairies Consolidation Act, 1915. Part II. is devoted to a description of a few special forms of apparatus and, so far as it goes, is useful. A considerable amount of Part III., which deals with the carbohydrates, has been rewritten; Pavy and Gerrard's processes for the volumetric estimation of sugars have been omitted, while the methods devised by Ling and Rendel, and Lane and Eynon, are added, also the iodometric method. The section on honey is well revised. There is an obvious error on p. 140, which, curiously enough, has escaped detection in the last two editions; from the text it would appear that the higher the specific gravity of a 10 per cent. solution of treacle the more *water* the treacle contains. King's new method for the detection and estimation of pectin and agar-agar are given; sections on improvers and bleaching agents in flour, infants' foods, baking-powder, and egg substitutes have also been added. A fuller discussion on the report of the Departmental Committee on the treatment of flour might have been provided with advantage.

Part IV. deals with the important subjects of milk, condensed milk, butter, margarine, cheese and lard. The chapter on milk is disappointing; there is too much adherence to the older text. More information should have been offered on the variation in composition, including a résumé of the statistical studies of Tocher. We miss any allusion to the method of Monier Williams for the estimation of boric acid in liquid eggs and other foodstuffs. Bacteriological technique for the examination of Certified Milk, "Grade A" milk, &c., is set out, but other methods of judging the cleanliness of milk are ignored. The sections on the pathogenic bacteriology of milk are the weakest in the book, being quite out of date. Klein's work on scarlet fever and milk is retained in its original form, and no recent work on this subject is mentioned. The opinion of Koch on the transmission of bovine tuberculosis to man is given as if the question were as still unsettled as it was in 1901. Important matters such as the presence of Salmonella bacilli in milk, cellular elements in milk, and the valuable work on streptococci in mastitis cases find no mention. It would have been better to omit discussion of the pathogenic bacteriology of milk, unless the authors were prepared to give an accurate and modern account of this important subject. Details of the methods of analysis of condensed and dried milk are clearly given, and the chapters on butter and margarine contain useful new sections.

Other parts of the book deal with the chemical analysis of various foods and beverages, and contain much useful chemical information. These sections are well up to date and include new methods such as those for the estimation of caffeine, theobromine, shell in cocoa, the new original gravity table of Thorpe and Brown, and Monier Williams's electrolytic apparatus for the estimation of arsenic. A useful chapter deals with the chemical analysis of water, but the account of bacteriological methods is meagre and ignores recent work, such as that on the differentiation of coliform organisms. To the medical man the book is rather a disappointment, although Dr. Cox has certainly effected great improvements. We trust that in the next edition more of the older matter will be deleted, and that the space saved will be allotted to new sections upon such foods as eggs, flesh foods, meat extracts, canned foods, fruits and fruit juices, which subjects are either omitted or inadequately treated.

SPECIAL GYMNASTICS.

Das Münchener Sonderturnen und andere Wege zur Körperlichen Ertuchtigung. Edited by Dr. FRITZ LANGE, o.ö Professor der Orthopädie an der Universität München. Munich: J. F. Lehmann. 1928. With 78 illustrations. Pp. 106. M.6.

FIVE writers have assisted Prof. Lange in the preparation of this handbook, the subject of which is special gymnastics and other means of procuring sound bodily development. In such a work a good deal of space is necessarily taken up with the consideration of faulty posture and its correction, a subject which has occupied a great deal of space in orthopædic works published in the United States of late years. The work of Goldthwait and his colleagues does not, however, seem to have attracted much attention from Prof. Lange. Prof. Eugen Matthias writes on the means of bodily exercises, Dr. Karl Gebhardt on pupils' exercise camps, Dr. Joseph Trumpp on problems of nutrition, the Editor discusses defects of posture and bodily exercises, Dr. Ludwig Aubry special gymnastics, and Prof. Georg Hohmann scoliosis and deformities of the thorax. These six authors, among them, cover a good deal of ground. The essay by Dr. Aubry which, presumably, gives its name to the book, contains illustrations of various types of faulty posture and of exercises for their correction. These, unlike the old-fashioned German gymnastics, involve the use of the minimum of apparatus, and seem well designed to achieve their purpose, although we have received the impression that faulty posture and its treatment is really more a problem of nutrition (in its widest sense) than exercise. It is more likely to be the result of departure from physiological normality than its cause. Knock-knee of such a severe grade as

that shown in Fig. 30, however, can hardly be classed as a mere faulty posture and certainly is not to be cured by gymnastics alone. The book is well illustrated and contains a good many useful hints for teachers of remedial exercises and gymnastics.

PRACTICE OF UROLOGY AND SYPHILOLOGY.

A Surgical Treatise on Genito-Urinary Disease and Syphilis. Fourth edition. By CHARLES H. CHETWOOD, M.D., LL.D., F.A.C.S., Attending Urologist and Director of Service, French Hospital, New York. London: Humphrey Milford, Oxford University Press. 1928. Pp. 879. 42*s*.

THE American School of Urology is prolific in its publications, and a great many new works on genito-urinary diseases have appeared in the last ten years. Dr. Charles Chetwood's "Practice of Urology" is, however, an old friend in a new garb. It has reached its fourth edition, and has celebrated that event by being clothed by a new publisher. Numerous illustrations have been added and the text has been extended so as to include recent advances. Useful paragraphs appear on the important subject of regional anæsthesia. Amongst other methods that have found recent favour with urologists are those based on nerve blocking. Dr. Chetwood's description of trans-sacral and cordal block will, therefore, be found to be a welcome addition to his work. The last chapters, as before, deal with the diagnosis and treatment of syphilis, and here new paragraphs appear on the subject of malarial and protein therapy. Dr. Chetwood's book is well known and its popularity should increase with the appearance of a new and up-to-date edition.

CILIARY MOVEMENT.

By J. GRAY. Cambridge University Press. 1928. With 105 figures. Pp. 162. 10*s*. 6*d*.

THIS latest volume of the Cambridge Comparative Physiology is at least as interesting as its predecessors. Cilia in one form or another occur throughout the animal series except in nematode worms and insects; they are responsible for the movements of spirochætes and trypanosomes at one end of the scale and for the protective evacuation of bronchial mucus with its entangled foreign particles at the other. Since this discovery by Leeuvenhoek, they have excited a great deal of observation and experiment, of which Mr. Gray gives an admirable and well-illustrated account. In his discussion of the intimate mechanism of ciliary movement he inclines to the view that the alternate bending and straightening are produced by alterations in the distribution of water in the filament, much in the same way as a strip of paper moistened on one side will curl over and then become straight again as it dries. Another chapter which attracts attention is that on the coördination of the movement on a mucous membrane; of this there is at present no simple explanation. In some cases it is under nervous control, in other cases it certainly is not.

TUBERCULOSIS.

L'infection bacillaire et la tuberculose chez l'homme et chez les animaux. Third edition. By A. CALMETTE, A. BOQUET, and L. NÈGRE. Paris: Masson et Cie. 1928. Pp. 883. Fr.125.

A THIRD edition of Prof. Calmette's book has appeared within six years of its predecessor—with an English translation of the second French edition intervening. No other book that we know covers quite the same ground, and we should place it in a small and select company of books which together contain the law and the prophets in tuberculosis. This new addition has lengthened the work to the extent of more than 200 pages. Besides numerous small editions, such as accounts of new staining reactions, there are new sections on the chemistry of the tubercle bacillus, the standardisation of tuberculin, the so-called filter-passing virus, serum diagnosis tests, and anaphylactic phenomena. The chapter on vaccine therapy has been recast and a full review of B.C.G. vaccine added. It is a pleasure to find a subject index in this edition. Prof. Calmette and the two new collaborators with whom he has done so much recent research, Drs. A. Boquet and L. Nègre, are to be congratulated on the production of a sound piece of constructive work. We hope one day it will be accorded a better binding.

NEOPLASMS.

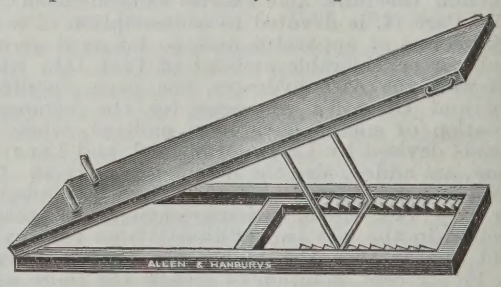
The Pathology, Diagnosis, and Treatment of Neoplasms originating in the Walls of the Urinary Bladder. A Monograph based on the Buckston-Browne Prize Essay for 1927. By LIONEL R. FIFIELD, F.R.C.S. Eng., Surgical First Assistant and Registrar and Chief Assistant in the Genito-Urinary Department, the London Hospital; Demonstrator of Anatomy, the London Hospital Medical College. London: H. K. Lewis and Co., Ltd. 1928. Pp. 94. 7*s*. 6*d*.

THIS monograph by the late Mr. Lionel R. Fifield was based on the essay with which he won the Buckston-Browne Prize for 1927, and the proofs had only just been passed by him when the tragedy occurred which terminated his life. The book begins with a thoughtful report and analysis of 306 consecutive clinical cases of growths of the bladder admitted to the wards of the London Hospital, all of them examples of the more common varieties—papilloma and carcinoma; and, after a short reference to the rarer growths, concludes with a chapter on original experimental research on transplantation of the divided ureter. Perhaps the best part of the book is the chapter on diagnosis, which is particularly clear and good, but the whole gives a well-rounded account of an interesting subject and shows that a painstaking worker and investigator has been lost to the profession.

New Inventions.

A FRAME FOR THE TRENDELENBURG POSITION.

IT is not infrequently desirable that patients should be kept in the Trendelenburg position after operation, and especially during the interval which elapses between removal from the operating-table to bed. The light wooden frame, here illustrated, can be placed on a trolley, the patient transferred



to it from the operating-table, and, on raising the foot-end of the frame, the Trendelenburg position can be maintained by means of a graduated ratchet support. The patient in this manner is taken to the ward or room, where the bed is ready, propped up at the foot. The frame should prove invaluable in hospitals and nursing homes where no facility exists for keeping the patient in the required position.

The apparatus was made for King's College Hospital, and it can be obtained from Messrs. Allen and Hanburys, Ltd., 48, Wigmore-street, W.

CECIL HUGHES, M.B., B.S. Lond.

THE LANCET.

LONDON: SATURDAY, JUNE 30, 1928.

THE LATER PHASES OF ENCEPHALITIS.

THE more complete our knowledge of chronic epidemic encephalitis, the less hopeful seems the outlook for those unfortunate enough to fall victims to the infection. A few years ago it was believed that quite a large proportion of those patients who survived their acute attack could be regarded as completely recovered and unlikely to suffer any ill effects. But time has shown that this prognostic valuation was much too optimistic, and there is now abundant evidence that very few of those affected escape without some resultant trauma, be it physical or mental. Some authorities, such as Dr. GARDNER ROBB, of Belfast, and Dr. ERIC PRITCHARD, of Indiana, are inclined to doubt if any patient is left without some relic of his illness, and though this is probably an exaggeration it is sufficiently near the truth to support the contention of those who advocate a very special consideration of the administrative and medical problems involved.

There is published to-day, under the auspices of the Ministry of Health, a report of an Inquiry into the After-histories of Persons Attacked by Encephalitis Lethargica, by Dr. ALLAN C. PARSONS. This comprises an analysis of 3500 patients notified to the Ministry between 1919 and 1926, and it shows that if 100 cases are investigated, say three years after the primary illness, the average findings will be as follows: Patients who have survived without serious consequences, 25; patients who have died, 35; patients who have become more or less disabled in mind or body, or both, 40. There is little doubt that we are dealing with a progressive disease which has little or no tendency to cure, and that the longer any series of cases is followed up the fewer become the patients in whom no disability can be found. The mental consequences of the disease are if anything more distressing than the physical, and their nature can be judged from a paper by Dr. P. K. MCCOWAN and Dr. L. C. COOK, published on p. 1316 of our present issue, in which a praiseworthy attempt is made to present a more or less orderly classification of the types of mental disorder which may be encountered. It is found that the mass of individual mental symptoms, usually described as protean and unclassifiable, can in fact be reduced to quite a fair degree of order under a few groups resembling well-recognised forms of mental disease. The description of the encephalitic temperament given by MCCOWAN and COOK seems to be applicable to most chronic encephalitics, quite apart from those psychotics who have come specially under their notice, and there is much to be said for their attempt to explain it in terms of regression. The reduction of the different forms of reaction shown by the encephalitic patient to various forms and degrees of this same mental mechanism of regression makes for a clearer understanding of their behaviour and other mental symptoms. It is only by close and prolonged observation of individual cases that we can hope to gain a true insight into the mentality of these unfortunate sufferers, and it is here that the various encephalitic units instituted throughout the country have valuable opportunities for research. This theory of regression advantageously groups the behaviouristic type of encephalitic with those suffering from other forms of mental disorder, which is preferable to regarding moral and mental changes as two forms of possible sequelæ as distinct from each other as from the physical sequels. It has long been recognised that encephalitis has varied in its manifestations from year to year, a particular symptom being much commoner at one time than another. Probably the most striking recent example of this is the present wane of respiratory phenomena and the increase in frequency of tonic eye spasms or oculogyric crises. Less spectacular but equally striking is the fact brought out by the Registrar-General's returns, which show that the number of deaths occurring at later stages of encephalitis is becoming larger each year, so much so that while in 1921 the percentage of deaths occurring between 4 months and 6 years after onset was 4·2, in 1926 it was 28·8.

The problem of the chronic encephalitic is likely to be with us for many years to come, and especially in the domain of administration should the Ministry of Health's report prove of value. It endeavours to appraise the amount of sickness attributable to the continued effects of encephalitis lethargica, and the estimates and various departmental reports which it includes should be useful in solving such administrative problems as the provision of institutional accommodation or employment centres and the adaptation of existing institutions to meet the needs of special cases. The passage of the Mental Deficiency Act, 1927, will doubtless prove of much value in dealing with certain troublesome patients, and we understand that already the Board of Control have set aside special villas at their State institution at Frampton for cases of this type. This, however, leaves untouched what is probably a much more important question, certainly numerically—namely, the disposal of the ordinary chronic encephalitic, and especially of poor patients, not able to remain at home. This is a problem which concerns ultimately the various public authorities, but they would doubtless welcome advice from medical men whose experience qualifies them to throw light on this difficult subject. It is surprising to find how many agencies and public departments are involved in looking after even a single encephalitic patient. Thus, apart from the local authority or hospital which deals with the initial disease, the patient may subsequently be dealt with by some education authority, the Home Office, poor-law guardians, the Board of Control, or the Prison Department. These authorities are unanimous in stating that many of the patients are not suitable for their respective institutions, and Dr. PARSONS'S statistics should make it easier to estimate the numbers for whom existing measures, institutional and other, are at present inappropriate.

EPIDEMIC JAUNDICE IN GREAT BRITAIN.

SINCE the classical description of this disease by E. A. Cockayne [1] there have been numerous outbreaks in the British Isles, and although hardly anything has been added to the symptomatology which he described, the ætiology seems almost more perplexing than it was 16 years ago. There can be no doubt that extensive epidemics of jaundice occur from time to time; the disease is usually limited to children, but when it spreads through a household—as it often does—the adults also are attacked. In the Surrey epidemic of 1927, reported by W. G. Booth,[2] all but one of 107 cases investigated were in children under 15 years of age, whilst in the Midland epidemic of 1925 Morgan and Brown [3] recorded that out of

100 patients 14 were adults—8 of them, curiously enough, belonging to a village where there were only 9 cases in all. We are here dealing with a disease, almost confined to children, which is clinically differentiated from Weil's disease (spirochætal jaundice) only by its comparatively mild course. In the Midland epidemic most of the cases were slight, but all degrees of severity were met with, from death in one case, severe illness in two others, down to a slight constitutional disturbance, accompanied by almost imperceptible jaundice, which would probably have been overlooked if it had not been preceded by graver signs in other members of the same family.

Although, however, Weil's disease and epidemic jaundice present much the same symptomatology, a distinct difference is noticeable in their infectivity. In outbreaks of epidemic jaundice it is not unusual to see as many as three or four children in one family infected, one after another, which is suggestive of a case-to-case infection, whereas in the war epidemic of Weil's disease in Flanders, no case of ward or laboratory infection was observed by Stokes, Ryle, and Tytler.[4] This raises the question whether epidemic jaundice in children is caused by the same organism, *Leptospira icterohæmorrhagiæ*, as is responsible for Weil's disease—a question which has naturally been investigated by many workers. Weil's disease is known to occur in the British Isles from time to time. Manson-Bahr, Wenyon, and Brown [5] in 1922 recorded the case of a seaman who apparently became infected from falling into the Thames and swallowing considerable quantities of water; in this case the leptospira was isolated and there is no doubt that it was the causal organism of the disease. Subsequently Gulland and Buchanan [6] described an interesting outbreak of spirochætal jaundice among miners in East Lothian, and later Lyon and Buchanan [7] gave an account of an outbreak in two families in Edinburgh in 1924, this being very similar to one reported by Hindle and Brown.[8] We thus have records of several outbreaks of infectious jaundice in the British Isles in which the leptospiral origin of the disease has been proved, and in contradistinction to these we have accounts of widespread epidemics of a disease indistinguishable from spirochætal jaundice by any hard-and-fast means. The Japanese observers Ido, Hoki, Ito and Wani [9] state that the infection in Weil's disease is transmitted probably from rats to man by means of the urine of rats, directly or indirectly. A. C. Coles [10] at Bournemouth in 1918 discovered that 9 per cent. of the wild rats harboured the leptospira. A. G. R. Foulerton,[11] working with rats in the London area, reported that 4 out of 101 were capable of infecting guinea-pigs, and later A. C. Stevenson [12] found the leptospira in 30 per cent. of 100 rats mainly from the London district. Although this organism in the wild rats has been shown to be serologically indistinguishable from that which is isolated from human cases of Weil's disease, in some outbreaks association with bathing pools and marshy ground seems to be the most important factor in the ætiology. That the leptospira was not discovered in the epidemics in Surrey and the Midlands is by no means sufficient justification for exonerating this organism. C. C. Okell,[13] as a result of his considerable experience with infected laboratory animals, draws attention not only to the fact that the disease may assume mild and atypical forms, but also to the great difficulty of isolating the leptospira in well-marked cases. This is in accordance with the findings of G. Buchanan [7] who only succeeded in infecting one animal out of 44 from fresh material from the patients in the Edinburgh epidemic, and quotes Inada as only having found leptospira in the blood on two occasions out of 100 cases. It is true that in the Surrey epidemic Okell failed to demonstrate the presence of antibodies in the sera of convalescents; but Garnier and Reilly [14] have found that in mild cases of spirochætal jaundice even 4 c.cm. of serum from a convalescent is insufficient to protect guinea-pigs against the disease.

The ætiology of these mild epidemics of jaundice remains obscure, but there is some evidence that the interval elapsing between one case and another will indicate whether the disease is spirochætal or not. This is by no means always as easy as it might seem, for if there is a single source of infection—e.g., a child during convalescence playing with any friends—it is unlikely that all the cases will be infected simultaneously and therefore show signs of the disease on the same day. What is more probable is that one child will develop it a few days after another, and if this happens, and the causal organism is still undetermined, the impression is given that rapid case-to-case infection is taking place in a family. Discussing this point, Buchanan [15] says that "In outbreaks of jaundice amongst school-children or in families, where case-to-case infection rapidly occurs, spirochætal jaundice can be ruled out"; but care is necessary in applying this rule. In the Edinburgh outbreak [7] there was in one family an interval of 21 days between the first and second cases, then four days between the second and third, and another four days between the third and fourth case, which was strongly suggestive of rapid case-to-case infection, but the disease was nevertheless traced to the leptospira. Future research will, we hope, include further investigation of the serology of the disease with a view to determining the presence or absence of the organism. The suggestions of Buchanan [15] and E. A. Ross [16] that complete bacteriological examinations of the nasopharynx and intestinal excreta should be performed may throw additional light on the ætiology, whilst a more complete study of the blood picture from day to day may be advisable, more especially as regards the differential count. Not only Buchanan [17] with guinea-pigs in the British Isles, but also V. N. Deuskar [18] with human cases in the Andamans, has drawn attention to the very distinctive lymphocytosis present in jaundice which is spirochætal in origin.

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THE TREATMENT OF HÆMOPTYSIS.

HÆMOPTYSIS may serve a useful purpose in frightening a tuberculous patient into seeking medical advice. Though there is a fairly large group of cases in which a sudden attack is not associated with any definite physical signs or subsequent ill-health, the symptom is one that demands grave consideration as well as skilful treatment. Fortunately the profession is now alive to the necessity of searching elaborately for the cause in every case, but there is still some doubt about the best method of dealing with the emergency itself. Hæmorrhage from the lungs is more difficult to arrest than bleeding in most other parts of the body, because the bleeding point is not accessible, and also because the lungs are never at rest. When the subject was discussed at the last

conference of the Tuberculosis Association at Oxford, Dr. Clive Riviere [1] pointed out in an opening paper that, owing to natural chemical and physiological processes, the bleeding often tends to stop of its own accord, either independently or in spite of therapeutic endeavours. Rational treatment has, he said, three objectives: to close the bleeding vessel, either by reflex action or by collapse of the lung; to reduce the flow of blood through the pulmonary circulation, by retarding the systemic circulation; and to increase the coagulating power of the blood, by such means as the intravenous injection of hypertonic salt solution, the intramuscular injection of calcium chloride, or the transfusion of serum or of whole blood. He maintained that retardation of the pulmonary blood flow was of more importance than the reduction of the blood pressure in the pulmonary circulation, and he submitted that there was no very satisfactory evidence that the vaso-constrictors, such as pituitrin, or the vaso-dilators, such as amyl nitrite, were useful to arrest the hæmorrhage.

Dr. Hugh Carleton,[2] in another timely review of the subject, says that in pulmonary tuberculosis four types of hæmorrhage may be distinguished. These are the initial hæmoptysis, rarely exceeding one or two drachms; hæmorrhage from a blood-vessel in a cavity directly communicating with the bronchial tree; hæmorrhage due to secondary infection of a tuberculous lesion by septic organisms, which is serious because it tends to recur every few days, the bleeding vessel not being accessible; and, lastly, bleeding from a pulmonary aneurysm, which rapidly causes death from loss of blood or from asphyxia. He believes that it is not the coughing, but rather the exaggerated inspiratory effort following a cough, which is chiefly responsible for the hæmorrhage; during the expulsive stage of a cough the intrapulmonary pressure increases to between 50 and 80 mm. of mercury, and the effect of this increase is to close the capillaries round the air cells and inhibit the flow of blood through the lungs. It follows from this that the actual cough in hæmoptysis is useful, because it expels the extravasated blood, and in order to prevent further hæmorrhage the patient should be encouraged to restrain the depth of the forced inspiration which follows the cough. Nearly all authorities are at one with Dr. Carleton in regarding artificial pneumothorax as the most valuable method of arresting tuberculous hæmoptysis which cannot be controlled by other means and in checking repeated small hæmorrhages. By compressing the lung the blood-supply is diminished, the pulmonary arteries and veins being no longer held open by the negative intrathoracic pressure; the cavities in the lung are compressed, and the tension on vessels spanning the cavities is released; and the risk of aspiration of blood to other parts of the lung is diminished. Lastly, nursing is carried out more easily and the patient may be placed on a full diet. A less efficient, but quite useful, method of prevention is to strap the affected side of the chest. As regards drugs, he thinks morphia useful to allay the distress of an unproductive cough, and to ease the pain of pleurisy, but not to stop pulmonary hæmorrhage. In this, again, he is in agreement with current opinion. A cynic has said that the proper way to use morphia in hæmoptysis is to give it to the patient's relatives and friends, and it is now taught that morphia is dangerous when given during the attack, on account of the abolition of the cough reflex, and the consequent danger of aspiration broncho-pneumonia. This attitude towards the drug has probably arisen from its abuse or excessive use. A small injection (gr. 1/6) at the onset does not abolish the cough reflex, and is certainly of value in calming an excitable and terrified person, as well as fulfilling one of Dr. Riviere's objectives—namely, that of slowing the rate of the heart-beat and of lessening the blood-flow through the pulmonary circulation. The danger of morphia in hæmoptysis arises when repeated injections of large doses are given and the cough reflex is actually abolished. It is remarkable how very few cases of aspiration pneumonia arise when the drug is judiciously used. The necessity for reassuring and calming the patient is probably not enough stressed at the present time.

The bronchial artery is more widely distributed to the lung than is generally recognised. If the bronchial arteries of a pig are injected with barium, it is seen that the main branches follow the bronchi closely, whilst cross sections show that the larger branches are situated in the peribronchial spaces, and only the smallest filaments are sparsely supplied to the submucous tissue of the bronchial mucous membrane. This meagre distribution of very small vessels under the mucous membrane, in Dr. Carleton's opinion, explains the rarity of severe hæmoptysis in chronic bronchitis.

[1] See THE LANCET, April 7th, p. 723.
[2] Bristol Med.-Chir. Jour., 1928, xlv., 39.

Annotations.

"Ne quid nimis."

SOME HOSPITAL PROBLEMS.

THE British Hospitals Association, which is at present, in effect, our only bureau of information upon all subjects connected with the voluntary hospitals, has just held its annual conference at Southport. The two days' sittings were inevitably overshadowed by the death, a few days previously, of Lord Hambleden, the honorary treasurer of the Association, which has owed much for years past to his sympathy and counsel. The conference was, however, well attended, and papers were read and discussed upon subjects and problems which are daily before the eyes of hospital administrators. The principal paper, however, that read by Sir Thomas Horder on the Place of the Voluntary Hospitals in relation to Health Services, dealt with a matter which touches the whole community, and has implications of the first importance in relation to the public health. So much has been said about it of late, both by supporters and critics at the voluntary hospitals, and by the candid friends who are both, that it is difficult to enunciate anything fresh. We may note, however, that Sir Thomas Horder lends his support to the widely accepted view that "a large number of beds in the poor-law infirmaries should be more efficiently utilised and should receive more definite and systematic medical supervision." One of the objects of the coming revision of the poor-law should be the better use of some of the infirmary beds in close association with the voluntary hospitals. We have to be careful not to overdo all that is connoted by that blessed word "coördination," but some form of coöperation has become as inevitable as it is essential, and the form it is to take will need to be worked out very carefully, not by a Ministerial department working on interior lines, but in close consultation with authorities of the highest practical experience.

Sir Thomas Horder thinks that the fears of the voluntary system coming under State control are a bogy, and he is probably right. It would be a very foolish and a very extravagant State which determined to obtain such control, but States are often foolish and, still more often, extravagant. Happily the voluntary system is emerging successfully from tests which might well have broken it down, tests which it is unlikely to have to face again for a long time. Yet the pressure upon it grows, not gradually, but rapidly, and failing coöperation between it and the municipal system much money and effort will be wasted and, what would be infinitely worse, much that lies at the root of improvement in the national health would be imperilled. It is only by this coöperation that it will be possible to obtain, among other desirable

things, that linking of consultant services on a really wide orbit, the need for which was urged by Mr. H. L. Eason. The Council of the Association, in its report to the conference, once more expressed its readiness to coöperate in a reasonable scheme of reform, an assurance the value and significance of which should not be underrated in view of the representative character of the organisation.

It is a little surprising that the Council should be of opinion that it is chiefly the smaller hospitals in outlying districts that are concerned with the uncomfortable consequences of filling their beds with motor casualties. To many of the large hospitals in great centres these casualties have become a nightmare, though it is obvious that a single bad accident may heavily overtax not for days but weeks a small institution which has no reserve of accommodation. As was to be expected the Council favour the suggestion of the Voluntary Hospitals Commission that, as a way of relieving hospital difficulties of this kind, motor insurance should be compulsory. One of the most interesting of the Southport discussions arose upon the paper on the Place of the Nurse in the Hospital, read by Miss M. E. Sparsholt, the experienced lady-superintendent of nurses at the Manchester Royal Infirmary. Not many years ago Miss Sparsholt's list of "necessities for nurses" in the way of comfort, convenience, and recreation would have seemed formidable, but the nurse of to-day is a much more highly trained person than her predecessor of yesterday, and her work is much more responsible. It is no longer enough that she should just obey the doctor—she has it in her power, very often, materially, to help him and the patient whose every variation she is able to watch. There are already difficulties about obtaining the right type of young woman for this often difficult and always laborious work, and one of the best ways of meeting those difficulties is to enable the student nurse, when she is not on duty, to follow the same pursuits as are enjoyed by girls who have chosen a less exacting career. She may prefer to spend some of her scanty hours of leisure within the walls of the hospital, and it is highly desirable that she should find there the amenities of a comfortable home.

THE CAMPAIGN AGAINST VENEREAL DISEASE.

In connexion with the recent meeting convened by the International Union Against Venereal Disease at Nancy, an arrangement was made between this body and the League of Red Cross Societies, according to which the latter's journal, the *World's Health*, should devote its June number to venereal disease. The enterprise shown in this matter by the Union's new secretary-general, Dr. Cavaillon, is most promising. In the first paper of this special number Prof. Bayet, chairman of the Union, outlines its aims. They are, as they should be, very ambitious. With regard to international coördination, he draws attention to the present lack of unanimity throughout the world as to the best methods of combating syphilis. Some countries concentrate on preventive and social work, some on disinfection of infected persons, some on laws and regulations, and some do what they can here and there without any unified plan. Prof. Bayet hopes that, by full discussion of the merits of the respective methods, the most effective may not only be recognised, but also adopted, in every country. While the Union disclaims any desire to impose a rigid system of prevention and treatment everywhere, it hopes to find and give prominence to certain general principles based on scientific research, and to leave the application of these principles to the special needs of each country. Dr. Cavaillon follows up this general outline with a more detailed account of what the Union is and hopes to do. It numbers 55 organisations working in 35 different countries, and it hopes to obtain supervision of emigration and inspection at the frontiers in connexion with venereal disease. Another aim is to get the international agreement regarding merchant seamen signed and applied everywhere. It also has a policy with regard to prostitution, and it aims at conducting a universal propaganda campaign which is, perhaps, the most important of all its objects. In this special number of the *World's Health* there are separate papers on the work of the League of Red Cross Societies, the League of Nations, the International Labour Office, and on the campaigns undertaken against venereal disease in each of the following countries: Austria, Belgium, Brazil, Bulgaria, Canada, Czecho-Slovakia, Esthonia, France, Germany, Great Britain, Greece, Hungary, Italy, Japan, Luxemburg, Netherlands, Spain, Switzerland, and the United States of America. Anyone interested enough in the subject to read this special number from cover to cover must agree with Prof. Bayet in his remarks on the diversity of methods employed in the different countries. By putting the accounts of these methods side by side the Union has given an effective demonstration of its policy of international comparison and unification.

INTERLOBAR EMPYEMA AND ABSCESS OF THE LUNG.

It is important to distinguish between abscess of the lung and empyema, because both treatment and prognosis are different. For this reason the possibility of interlobar empyema should be kept in mind, especially as a complication of pneumonia. G. Dieulafoy, whose brilliant account of the condition of 1900 has become classical, described two modes of onset; first and most commonly as a post-pneumonic or para-pneumonic complication, and, secondly, as an insidious sequel to indefinite pulmonary congestions. Basing his classification on the symptoms and anatomical lesions, he divided the course of the condition into stages—namely, the closed stage, in which the patient has constitutional signs and symptoms of suppuration, but no special respiratory symptoms; and later the open stage, when the empyema has burst into the lung, with attendant intermittent expectoration of pus, hæmoptysis, and foul odour of the breath. He further emphasised the "suspended" nature of the physical signs—i.e., the presence of an area of dullness in the middle region of one or other hemithorax with comparatively normal physical signs above and below the area.

Dr. Raoul Kourilsky shows [1] that it is very difficult—indeed, almost impossible—to distinguish on clinical and radiological evidence the open stage of interlobar empyema from pulmonary abscess occurring in the region of the interlobar fissures. He points out that, since Dieulafoy's paper was published, the general tendency in France and elsewhere has been to diagnose interlobar empyema on insufficient evidence, without controlling the diagnosis surgically or post mortem. The general attitude of medical opinion towards interlobar empyema may be stated thus: when in a patient with intermittent purulent expectoration, hæmoptysis and fever, an area of "suspended" increased density is observed clinically, and when this is confirmed radiologically by the presence of a transverse shadow suggesting air and fluid, surrounded by broad shadows indicating increased density and congestion of the lung at the level of an interlobar space, a diagnosis of interlobar empyema is made. When, in a patient who expectorates pus, and who is not tuberculous, the existence of a focus with or without cavitation is established and shown to be situated in a lobe of the lung, but not in relation to an interlobar fissure, a diagnosis of abscess of the lung is made. Kourilsky points out that the diagnosis of interlobar empyema is generally wrong, and that nearly always the condition turns out to be a pulmonary abscess. Of 52 cases of intra-

[1] Kourilsky, Raoul: Abcès du Poumon et Pleurésies Interlobaires, Arch. Med. Chir. de l'Appar. Resp., 1927, ii., 297.

thoracic suppuration, 14 were diagnosed as interlobar empyema, nine of these at operation or autopsy proving to be abscess of the lung in the region of pulmonary fissures. Of the remaining five only two were shown at operation to be interlobar empyema, whereas the diagnosis in the other three cases, even after operation, was not definitely established. Kourilsky thinks that it is possible to make an exact diagnosis at operation only in cases where the abscess cavity can be investigated thoroughly by manual examination and the lung is felt to be elastic and not consolidated. He further maintains that only at autopsy can a positive diagnosis be made. It is interesting that none of the 14 cases in which interlobar empyema was diagnosed arose as a complication of pneumonia, and that in the two cases in which he was satisfied that the diagnosis was correct the condition was post-operative.

The conclusions Kourilsky reaches are that interlobar empyema is actually very rare, and that abscess of the lung is usually the correct diagnosis when the symptoms are those of Dieulafoy's open stage of interlobar empyema; that the diagnosis of interlobar empyema is possibly more plausible when the symptoms arise as a post-pneumonic complication and not insidiously; and that it is extremely important to differentiate between the two conditions because the treatment varies in each case. In surgical interference for abscess of the lung it is essential, if pleural adhesions have not already formed, to suture the parietal and visceral layers of the pleura before opening the abscess, whereas in interlobar empyema incision and drainage usually lead to cure. The prognosis of interlobar empyema is much better than that of abscess of the lung. According to J. Comby and others, interlobar empyema is more common in children than in adults, whereas pulmonary abscess is often encountered in adults, but very rarely in children. Study of the radiograms and clinical reports in Kourilsky's series suggests that most of the erroneous diagnoses arose from misinterpretation of the radiological appearances. Apparently there is a tendency in France to ascribe a shadow indicating air and fluid (*image hydroaérique*), especially if the long axis is transverse, to the presence of interlobar empyema. After pus has been withdrawn on exploratory puncture, an *image hydroaérique* means pyopneumothorax. The causes of this condition are numerous, and an interlobar empyema rupturing into a bronchus is one of the rarest of them.

THE TALE OF MEDICAL RESEARCH.

AT the annual meeting of the Research Defence Society held recently in London, Sir Bernard Spilsbury delivered the second Stephen Paget Memorial Lecture on the "Work and Responsibilities of the Pathologist," and his address will be found in another column of this issue. It is a model of what a public deliverance should be, when the intention is to reveal to the layman not only the results of medical science, but the basis of the work done, so that the reasons for various procedures may be realised and, incidentally, so that the completely foolish nature of much criticism may be revealed. Intelligent citizens can detect from Sir Bernard Spilsbury's deliberately simple explanations the groundwork of much modern pathology, while medical practitioners, who may find themselves asked to refute heresies promptly, need not go beyond his words for the needful arguments. That vigilance of this sort is required on the part of the medical profession, in order to protect the public from ill-placed sentimentality, was made clear by Lord Knutsford, who, following Sir Bernard Spilsbury and proposing the vote of thanks to the lecturer, read to the meeting a post card which had been sent out from the British Union for the Abolition of Vivisection. The post-card was an invitation to the members of the Union to write to the British Broadcasting Company, and to suggest that Dr. Hadwen should broadcast a talk upon vivisection, while the recipients of the post card were requested not to send that document itself to the B.B.C., inasmuch as their communications would "have more influence if the B.U.A.V. is not mentioned." Sympathy with the kind-heartedness of those who oppose medical research is likely to be blunted by procedures of this sort, as it will also be alienated by their resolute blindness to evidence. At the business meeting of the Research Defence Society, presided over by Lord Lamington, Mr. F. J. Peart publicly recanted his signature to a declaration which he had given as a member of the staff of the Battersea (Antivivisection) Hospital not to countenance experiments on animals unless they were designed for the benefit of animals. His action arose from finding that he was unable to treat a case of tetanus in the wards of the hospital with antitetanic serum, and was consequently obliged, in the interests of the patient, to treat the patient surreptitiously. It is certain that if the authorities of the Battersea Hospital had learned the lessons, old and oft-repeated but excellently summarised, in Sir Bernard Spilsbury's Memorial Lecture, they would have hastened to permit Mr. Peart, in the cause of humanity, to carry out scientific treatment.

REMOVAL OF THE RIGHT CEREBRAL HEMISPHERE IN MAN.

THE progress of surgery has been marked by increasingly bold removal of structures that were previously regarded as essential to the life or well-being of man. With the development of antiseptic surgery the abdominal cavity has most readily lent itself to these onslaughts, and it has become a matter of history that man can exist in comfort without his spleen, gall-bladder, and large portions of his gastro-intestinal tract. In other parts of the body progress has not been so easy, and interest is now centred on what surgeons may be able to accomplish within the thorax and cranium, regions which have been aptly called the Great North-west of Surgery. The latest feat of exploration in these regions is the removal of the right cerebral hemisphere, reported by Walter E. Dandy.[1] In five cases of extensive deeply seated glioma Dandy has completely removed the right cerebral hemisphere. One patient died from hæmorrhage within 48 hours, another died two weeks after operation from pneumonia, a third and fourth died of recurrence, one three months, the other 3½ years after operation, while the fifth patient was still alive, two months after operation, at the time of Dandy's report. The patient who lived for 3½ years after operation was originally admitted to hospital in coma and proved to have an extensive glioma of the right frontal and temporal lobes. The result in this case may therefore be considered remarkable. The operation is, of course, followed by left homonymous hemianopsia and by permanent paralysis and anæsthesia of the left side of the body, but, as would be expected from past experience of excision of various portions of the right cerebral hemisphere, it does not produce any obvious mental impairment. Dandy finds that the paralysis is complete in the left leg and arm, but only partial in the left side of the face. Rigidity develops very slowly in the paralysed limbs and is never pronounced in the leg. Deep sensation is well preserved and movements of the paralysed limbs are sometimes painful. Hearing remains normal in both ears, a finding which disposes of the assumption that there is cortical representation for hearing in the right temporal lobe. Dandy's paper thus contains important physiological observations, and it is to be regretted that his cases are not reported in detail. From the practical standpoint it is doubtful whether the operation of complete removal of the right cerebral hemisphere will ever become popular with neurological surgeons or their patients. Retention of life at the

[1] Jour. Amer. Med. Assoc., 1928, xc., 823.

cost of permanent and perhaps painful hemiplegia is a prospect that will not commend itself to many patients, even though they are already paralysed when they seek treatment. The hemiplegia produced by an invasive tumour of the hemisphere is probably more often due to pressure on the pyramidal tract than to actual destruction of its fibres, and it therefore seems likely that some form of radiation will ultimately provide the best means of attacking deeply seated gliomas.

JAUNDICE DUE TO MOVABLE KIDNEY.

IT has for long been known that jaundice may sometimes accompany movable kidney, but the exact relationship between the two conditions has been a matter of dispute. The kidney is intimately in contact with the duodenum, and if in the course of its descent it acts as a drag on this organ, jaundice may actually be due to mechanical obstruction of the common bile-duct. A. J. Schole [1] reports a case history which is of interest in this connexion. A man sustained an injury to the back which necessitated an operation to suture the lacerated and displaced kidney and to restore it to its proper position. He remained well for over 20 years, when another injury caused an attack of pain and jaundice and, in fact, initiated a train of symptoms referable to the gall-bladder. These symptoms had already continued for 18 months when the patient came under observation. At its height the jaundice was so intense that no bile at all flowed into the intestine. A radiogram revealed a collection of stones in the right lumbar area. These, together with the pyuria, led to a renal investigation, when a right pyonephrosis was found to be present. After drainage of this lesion through a ureteric catheter the jaundice disappeared, but it returned immediately the catheter was removed; the catheter was replaced and again removed, with the result that the jaundice again disappeared and returned. Nephrectomy permanently cured the gall-bladder symptoms. Dr. Schole believes that drainage of the pyonephrosis allowed subsidence of the perirenal infection and thus diminished the pressure upon the common bile-duct. In the literature on the subject there are to be found a certain number of cases where fixation of a dropped kidney has cured attacks of jaundice, but the association is curiously rare considering the anatomical relations of the kidney to the duodenum close to the entrance of the common bile-duct. This may be due to the fact that unless an infection of the movable kidney takes place, leading to some perinephritis, the organ slips rather easily up and down behind the perineum without exerting any pull upon the duodenum itself.

THE ROYAL COLLEGE OF SURGEONS MUSEUM.

IN his annual report on the museum of the Royal College of Surgeons of England the Conservator refers to the continued increase in the size of the collection and the problem of providing space for its accommodation. He anticipates, as a possible necessity, some limitation in the scope of the museum, since enlargement of the building is precluded owing to the limited financial resources of the College. A similar measure was resorted to on the foundation of the Natural History Museum, South Kensington, when the subjects of zoology and comparative anatomy were excluded from the aims of the College museum. The report of the curator, Mr. Cecil Beadles, on the present pathological collection gives evidence of a strenuous year's work; in addition to the work of recataloguing the collection of special pathology, which appears to have made fair progress, no less than 850 specimens, including the additions, have been remounted during the year. Of the new specimens, 150 in number, the curator refers to many of great interest, among which may be mentioned a fine series from a case of Recklinghausen's disease showing widespread involvement of the cranial, spinal, and sympathetic nerves; and a tibia from a second case showing the rare involvement of the periosteum in the hyperplastic process, with associated deformity of the bone. Other specimens of interest are a femoral aneurysm of tuberculous origin, a chondroma of the lung arising from the bronchial cartilages, and a lymphadenomatous enlargement of the thymus gland forming a tumour some six inches in diameter, which was removed by operation from the anterior mediastinum. Mention should also be made of a series of specimens from cases of pernicious anæmia; these were presented by Dr. William Hunter and illustrate the changes in the tongue, stomach, and intestines which, as is well known, he regards as characteristic of the disease. In the physiological department very interesting specimens are added by its curator, Mr. R. H. Burne, F.R.S., showing injections of the afferent vessels of the lymphatic circulation in fishes, the discovery of which throws light on the nature and evolution of the lymphatic system generally. The additions to the museum will be on view in Room 1 from July 5th, the date of election of new members to the Council, until July 28th. A passing reference merely can be made to the active work in progress in the osteological, odontological, and historical sections, detailed accounts of which have appeared in previous reports. A valuable series of casts illustrating the surgical methods of treatment of cleft palate have been presented by Sir James Berry through Sir Frank Colyer, and the museum now possesses an exact cast of the Taungs skull, the gift of Prof. R. A. Dart. A task of some magnitude has devolved on the museum in connexion with the Strangeways collection of specimens of chronic arthritis, several hundreds of which have been accepted from the trustees of the collection. Dr. Strangeways never published the results of his investigations and his manuscripts and specimens have now been placed at the disposal of Mr. Lawford Knaggs, who has undertaken their examination and revision. A kindly reference is made in the report to the serious loss sustained by the museum in the death of Mr. Alban Doran; his erudition and scholarship were devoted to the museum during many years, and they have a lasting memorial in the descriptive catalogue of the Collection of Surgical Instruments, a work of a kind that very few have the learning and ability to undertake.

THE ACNE OF ADOLESCENCE.

FACED with a stubborn case of acne it is not enough to encourage a hope that the affliction will have passed by the end of the patient's third decade of life. The anticipation is not always fulfilled, and in the meantime the victim of this complaint is suffering under a disability that may prove a serious handicap. Considered in the light of its effect on careers and self-confidence, acne is often far from trivial, and every case demands a serious attempt to use the means of cure at our disposal. These were ably summarised not long ago by Dr. D. E. H. Cleveland.[1] He does not pin his faith to this or that particular remedy, for the very good reason that there is no one cause for the condition to be treated. The ætiological components include both physiological and morbid tendencies, not forgetting an inherited predisposition of the skin, which may be either greasy (seborrhœic) or dry. Though the presence of septic foci in teeth and tonsils, constipation or chlorosis are doubtless aggravating factors they are in no case causal, and very few cures can be registered by their elimination alone. These and many other subjects, such as exercise, diet, habits, and fresh air, are rationally considered by Dr. Cleveland, who passes on to discuss in their relative importance the various methods of treatment available. He condemns the use of cosmetic creams and excess of tobacco, carbohydrates, and cooked fats. He does not favour hot baths

[1] Trans. Amer. Assoc. Genito-urinary Surgeons, 1927, xx., 223.

[1] Canad. Med. Assoc. Jour., 1928, xviii., 261.

mless they are followed by a cold shower, and ecommends that the patient should be made to hampoo the scalp every week. After a short list f simple and well-tried local applications recomnended by Darier, Sabouraud, Duhring, and Ormsby, ie concludes by devoting only a small space to the ndications for ultra-violet and X ray treatment. n this respect he will have the support and comnendation of most expert opinion. There is far too nuch resort to methods based on the fashion of the noment, and patients will often demand a particular :ind of treatment because it was used with success n the case of a friend, or because they have read bout it in the lay press. It is interesting to compare he reserved statements on treatment with X rays n this paper with those made by Dr. J. L. Webb.[2] The latter evidently has no qualms and appears to se the method in every case after removal of each ndividual comedone, the incision of pustules, and ntradermal use of a vaccine. Whilst mentioning he cost of the treatment he makes no mention of ts dangers, and if, as is stated, "three-quarters of n erythema dose, *unfiltered*, are given each week," here is reason to fear that these are not very remote. Dermatologists agree that X rays are a valuable djunct to treatment in severe and intractable acne, ut most of them would condemn its use as a routine, ot only because it may do permanent damage to ndividuals, but because one or two disasters would ring the method into disrepute. Assertions like hose made in this paper are not infrequently followed iterally by persons whose knowledge of the subject as been gained solely from text-books or by a short ttendance at some clinic. Few of them have had a horough training or an opportunity of seeing the ppalling late results of X ray burns of the face—harvest which we are now beginning to reap rom the earlier treatment of lupus vulgaris and ypertrichosis.

INFECTIOUS DISEASE IN SCHOOLS.

FORTY-FOUR years ago, when the Medical Officers f Schools Association was founded, questions were ent to every important school in this country to scertain what precautions were taken to guard gainst infectious diseases. At this time many of he leading institutions maintained a policy of ecrecy about the health and sickness of their pupils, fact which had hindered THE LANCET Sanitary ommission on Public Schools in its inquiry a few ears before. The attitude of others was typified y the proud advertisement that no doctor had isited them for several years, and it was not surprising hat the Association's questionaire revealed differnces in theory as well as laxity in practice. The esult was that the Association issued a Code of Rules[3] for the Prevention of Communicable Diseases n Schools, which, in its numerous editions, has roved of great value not only to school authorities ut also to parents and guardians. At the time of its ppearance we commended these rules as practical nd plain, and the same words apply to the ninth dition which has just been published. It contains, s before, chapters on general hygiene, the infirmary, he medical examination of scholars, general preautions against the introduction and spread of isease, and measures to be adopted when infections ave broken out; but its usefulness has been greatly xtended not only by expansion of these sections but y the addition of a "definition of terms" based n data published by the American Public Health ssociation in 1926. This includes a list of the ommoner infections, with brief notes on the infectious gent, the source of infection, the mode of transission, the incubation period, the period of comunicability, the methods of control, and the time f return to school. It forms a concise and dogmatic tatement of our knowledge of infectious disease from the point of view of schools, and it will be acceptable to every practitioner who wishes to have the facts available for ready reference. Two short appendices describe the modern methods of preventing diphtheria and scarlet fever, and the treatment of tinea, whilst a third, also new, briefly discusses the policy of excluding infection from schools, in the light of recent work on "herd immunity." Another appendix summarises the general theory of disinfection, little understood outside the profession.

[2] Clin. Med. and Surg., 1928, xxxv., 180.

[3] Code of Rules for the Prevention of Communicable Diseases n Schools. Ninth edition. London: J. and A. Churchill. 928. Pp. 74. 2*s*. 6*d*.

THE WATER OF THE METROPOLIS.

THE result of chemical and bacteriological examinations of the London waters covering the year ending Jan. 1st, 1928, has just been issued in the form of Sir Alexander Houston's twenty-second annual report as Director of Water Examination to the Metropolitan Water Board. The report contains interesting accounts of the chlorination of Thames and New River water, of which we have now 12 years' experience, an experience so satisfactory as to have led to the discontinuance of protests on the ground of doping. Evidence is here set out to show that this treatment of potable waters not only provides a valuable measure of security, but has the great financial advantage of producing a better water than can be achieved by prolonged storage, although for other considerations additional storage accommodation in the London areas may be necessary. Neither the Thames nor the Lee, which, excluding the Kentish wells, form the main source of the water-supply of "Water London," can be considered ideal for the purpose which they serve, but though the prefiltration fluid may be considered unsatisfactory compared to a virgin mountain stream, yet the waters, as judged by the *B. coli* test, can be, and are, improved from 100 to 1000 times by judicious and unceasing treatment. This is certainly a matter for satisfaction, but improvement in quality consequent on storage should not be used as an argument for relaxation in purification, as this report shows.

Among the varied contents of a long and closely packed document[1] some interesting notes on the meteorological circumstances of the year show how a period of persistent wet affects the water-supply of an immense urban community. We are thus reminded that last year February was dreadfully wet; that March and April were wet; that, though May was a rather dry month, June, July, and August were wet and cold; and that September and December were exceptionally wet months. In November the rainfall was about normal, and in October alone it was really below normal. These circumstances formed a trying year for all responsible for waterworks. First, the water-supply was brown in colour over long periods, and it was hard for consumers not to eye it with suspicion. Further, water may actually deteriorate in quality during floods if accompanied by seriously cold weather, as frost interferes with the filtration processes. And this occurs exactly when the rate of filtration has to be increased to meet an augmented demand for water, arising to an appreciable extent from the wily extravagance of householders, who leave taps running in order to protect themselves against the bursting pipes.

Last year it may be remembered that, as a preliminary to the scientific description of the water-supply of London and the chemical and bacteriological tables reinforcing the information, Sir Alexander Houston described the Kent wells, and in so doing suggested that water-supplies should not be divorced from their historical settings or associations. This idea is again present in the twenty-second annual report, wherein the river Lee is described at length as a source of water-supply in an elaborate essay illustrating, by pen and photograph, the whole course of the river. The beauties of the stream as

[1] Metropolitan Water Board: Twenty-second Annual Report. London: P. S. King and Co., Ltd. Pp. 102. Profusely illustrated. £1 1*s*.

it passes through the lovely Hertfordshire scenery are eloquently set out, with ample literary references, and its tributaries receive similar notice. We congratulate Sir Alexander Houston on his successful blend of science and letters.

QUALIFIED PRACTICE IN PHYSICAL TREATMENT.

THE advantages to be derived from physical treatment are becoming better known not only to the medical profession but to their patients. To give only one example, the public are nowadays prepared to pay a reasonable price for massage after fractures and are likely to demand prescription of this treatment if it is not spontaneously suggested to them. Unfortunately, a large number of unqualified people, by specious advertisement and otherwise, are attracting to themselves much of this work, to the disadvantage of the patient and to the cause of physical treatment generally. The publication of the recent Register of Members of the Chartered Society of Massage and Medical Gymnastics [1] shows that there are now 6570 men and women who are qualified, by training and examination, to carry out physical treatment. It will be seen from the place index which forms part of the Register that there are few, if any, districts where none of its members is available. It is easy to distinguish between the qualified and unqualified, since under the Charter members of this Society alone are entitled to style themselves "Chartered Masseurs" and "Chartered Masseuses." Before registration each candidate for membership has to sign an undertaking not to treat any case except under the direction of a registered medical practitioner; not to advertise except in recognised medical and nursing papers; not to sell goods to patients in a professional capacity, and not to accept secret commissions on the sale of goods. It is seldom that these undertakings are not faithfully respected, and it would seem only fair that members of an ancillary profession which is so loyal to medical practitioners, should receive corresponding support. There is good reason to believe that this is not always forthcoming, possibly because the activities of the Society are not sufficiently well known, though attention has frequently been drawn to them in these columns.

One of the duties of this Society is to inspect all the schools in which candidates for the Society's examinations are being trained. This inspection is carried out in the most searching manner, and every attempt is being made to bring those schools which lag behind up to a proper state of efficiency. The progress made since the Charter was granted in 1920 is remarkable, and if the Society receives the support which it deserves, the standard of physical treatment in this country should reach a high level.

HYDROCYANIC ACID AS AN INSECTICIDE AND RATICIDE.

Hydrocyanic acid is much used as a means of killing rats, bugs, and other vermin, more especially on ships. About its efficacy there can be little difference of opinion, but it is very poisonous, and elaborate precautions have to be taken to ensure the safety of human beings and domestic animals exposed to risk. It appears that in France this deadly substance has been used for "disinfecting" houses, and as accidents have been reported the Paris police have now forbidden its employment in any form for disinfection or for the destruction of harmful animals in habitations. It certainly seems undesirable that this or any other poison gas should be used in any place which cannot, like a ship, be effectively isolated from surrounding dwellings. Such isolation is impossible in any house which is not detached from other buildings and distant from public highways. Detached houses standing in their own grounds are not usually overrun with bugs, but cockroaches only too often abound in old country houses which have been fitted with central heating. Those who are tempted to use so efficacious a means of killing these vermin should remember the Paris edict. Information about the way the gas is used will be found in a pamphlet [1] recently issued by the Ministry of Health. The particulars it gives will enable any ordinarily intelligent person to generate, use, and dispose of the residues left after use of HCN, and it includes valuable information on gas masks and on first aid for persons overcome by the gas.

As was announced last week, subscribers to the Dawson Williams Memorial Fund will meet at the Royal Society of Medicine, 1, Wimpole-street, London, W., on Tuesday, July 10th, at 5.30 P.M., to receive the statement of Sir StClair Thomson, the hon. treasurer, and to decide upon the form of the memorial. The organising committee recommend that the memorial should take the form of a "Prize to be awarded every two years, or at longer intervals, for the best work which has appeared on pediatrics since the previous award." The list of subscribers will remain open until July 10th, and contributors should send their cheques to Sir StClair Thomson before that date. At present the net amount to be invested will be somewhat over £800. The meeting will also be asked to make arrangements as to the trusteeship of the Fund.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCLXXXII.

THE TREATMENT OF ONYCHIA.

THE term "onychia" is usually defined as an inflammation of the matrix of the nail, but in practice it is used rather more loosely to include inflammations of the nail bed and also of the nail folds, though for the latter the term perionychia is often used. It is however often difficult, clinically, to separate inflammations of the nail matrix and bed, and hence the term onychia is often employed to cover inflammations of all these structures.

Inflammations of the nail may result from physical or chemical injury, from local infection by bacteria or fungi, or may be a part of some general inflammatory eruption, such as syphilis, eczema, or psoriasis. With this last group we are not concerned in this article.

Physical injuries to the nail may be traumatic—crushing, bruising, and the like; due to heat or cold—burns and frostbite; or to harmful radiations, as in X ray and radium dermatitis.

Chemical injury to the nails is frequently seen in industrial workers; it is almost invariably secondary to dermatitis of the fingers, but not infrequently this inflammation spreads over the nail folds and involves the matrix, usually producing a chronic type of onychia with mal-growth of the nail, so that this latter becomes rough, thickened, and furrowed. The treatment consists of removing the cause and dealing with the associated dermatitis with soothing and protective applications, the nails requiring no special treatment.

It is, however, to the infective types of onychia that our attention is specially directed; of these there are two groups: pyogenic onychia and mycotic onychia.

Pyogenic Onychia.

Pyogenic onychia is a common affection, and may be due to infection either with streptococci or

[1] Printed for the Society by the Campfield Press, St. Albans. Pp. 266. 4*s*.

[1] Memorandum on the Fumigation of Ships with Hydrogen Cyanide. H.M. Stationery Office. 1928. 1*d*.

staphylococci. The former is not infrequently seen in children in association with impetigo contagiosa, while in adults staphylococcal infection seems more frequent. In adults the infection is more common in women than in men, and this doubtless is due to their more frequent use of manicure instruments and also possibly to the fact that they have their hands constantly in water. Several types are seen, of which the following are the most frequent:—

1. *The Acute Suppurative Type* usually affects a single nail, is associated with much swelling of the nail fold, and frequently involves the matrix, so that the nail is sooner or later shed. The swelling is confined to the nail fold and the tissues immediately surrounding it and does not involve the ball of the finger. There is often a good deal of pain and tenderness localised to this area and to the root of the nail. Pus can be squeezed out from under the nail fold. As the nail separates granulations make their appearance under the root of the nail. In the early stages it is advisable to soak the finger two or three times a day in a 1 in 4000 solution of potassium permanganate and to dress it with 1 in 4000 perchloride of mercury fomentations. Many cases will subside with this treatment alone. In some cases Bier's cupping may also be applied. If there is evidence of involvement of the matrix it is better to remove the nail at once. This is indicated when the pain is not relieved by fomentations or baths, or when pus can be squeezed out by pressure on the base of the nail as distinguished from pressure on the nail fold. Incision of the nail fold is better avoided; it is rarely necessary for drainage and may increase the area of infection.

2. *The Recurrent Suppurative Type.*—In this variety several nails are frequently affected, and the symptoms are less severe, but tend to clear up for a time and then recur. The matrix is not usually much involved, but slight irregularities of the nail growth may occur, indicating slight involvement of this structure. In these cases evulsion of the nail is rarely necessary or even successful, recurrences tending to occur even after several removals. It is most important to protect the nail fold from injury, and a weak antiseptic dressing, such as 1 in 4000 perchloride of mercury, should be worn till the inflammation has subsided; then, for several months, a light cotton finger-stall should be worn as a protection and the hands should be kept out of strong soapy or alkaline solutions. Bier's cupping is also useful in resistant cases. Dr. A. C. Roxburgh [1] has had success with a method suggested by Dr. H. G. Adamson of inserting a small pledget of cotton-wool soaked in pure carbolic acid under the nail fold twice a week. It is in this type of case that an autogenous vaccine may be tried, though the results are not uniformly successful.

3. *Chronic Non-suppurative Type.*—This variety, which usually attacks many fingers and causes much deformity of the nails, can be very successfully treated by X rays. It is essential, however, to give only small doses. One-third of a Sabouraud pastille dose given once a week for four weeks is the maximum that should be given at one time. This usually clears up the condition, but if it does not the treatment should be abandoned. If recurrence takes place, the doses can be repeated after an interval of two months. I have not found X rays of much value in the suppurative cases. If X rays are not available, the nail folds and roots of the nails may be painted twice daily with 1 in 1000 flavine in liquid paraffin and light cotton finger-stalls worn. It is of extreme importance in these cases, as in the last type, to avoid all injury, however slight, to the nails and their surroundings. In all these types of case ointment should be avoided.

4. *Septic Infection of the Nail Bed.*—Occasionally septic infection of the nail-bed occurs, as, for example, when a splinter is pushed in under the free end or lateral margins of the nail. When this happens a small abscess may develop under the nail, and is indicated by the presence of severe pain under the nail and of tenderness usually localised to a relatively small area. After a day or so a small yellowish spot appears, and this increases in size, the symptoms meanwhile becoming intensified. In these cases all that is necessary is to cut away the portion of the nail over the small abscess so as to allow free drainage and to foment with a 1 in 4000 perchloride of mercury dressings.

[1] Clinical Journal, Jan. 27th, 1926, p. 41.

Mycotic Onychia.

Ringworm fungi and favus not infrequently attack the nails and produce a variety of lesions. The organisms of thrush and other monilia may also produce onychia. Infection commonly takes place from the free edge, leading to a gradual separation of the nail from its bed, but it may also commence under the nail fold and at the lateral margins. A certain diagnosis can only be made when the fungus can be demonstrated in scrapings. The condition is difficult to treat, and it is usually necessary to remove the nail. This can be done either by evulsion or by softening the nail with liquor potassæ, carefully applied to the nail surface and scraping the softened nail away gradually. When this is done dressings of Whitfield's ointment (5 per cent. benzoic acid and 3 per cent. salicylic acid) should be applied. Norman Walker's method is very efficient; it consists in applying Fehling's solution on a piece of lint cut accurately to fit the nail, after having applied an ointment to the surrounding skin. A rubber finger-stall is then fitted and left in position for 12–24 hours. When it is removed, the nail can be scraped away and a mild antiseptic ointment applied, or weak mercurial fomentations if there is much inflammatory reaction. Thereafter, iodine ointment, or Whitfield's ointment, can be used till the nail regrows.

If only the distal portion of the nail bed is involved it may suffice to cut away only that portion of the nail which overlies the affected area, and then instil two or three times daily tincture of iodine or 1 in 1000 perchloride of mercury in 90 per cent. alcohol.

G. M. McKee has used X rays with some success in ringworm of the nails, though he is unable to explain its mode of action. The application of X rays in this connexion, however, is rather complicated and any overdosage may produce permanent damage. Those who desire to use this method should study the somewhat elaborate technique laid down by McKee in his book ("X Rays and Radium in the Treatment of Diseases of the Skin," second edition, 1927).

A. M. H. GRAY, M.D., F.R.C.P. Lond.,
Physician in Charge of Skin Department,
University College Hospital.

DONATIONS AND BEQUESTS.—Mrs. Caroline Locke Huth, of 45, Upper Grosvenor-street, London, left £20,000 to found and endow a ward for men and boys in the West End Hospital for Diseases of the Nervous System, Regent's Park.—Miss Mary Taylor, Dunfermline, left £1500 for the endowment of a bed in Dunfermline and West Fife Hospital.—Mr. Herbert Francis Lancashire, of The Park, Nottingham, left £2000 to the Nottingham University College, £1000 to the National Lifeboat Institution, £500 each to the Nottingham General Infirmary and the Nottingham Dispensary.—Mr. Robert Lumley Rees, Liverpool, cotton broker, left £3000 to the Royal Infirmary, Liverpool.—Under the will of Miss Grace Levett, Kingston-on-Hull, Yorks, who left £23,424, subject to certain life interests, the testatrix gave one-tenth of the ultimate residue each to the Hull Royal Infirmary, the Hull Victoria Hospital for Sick Children, and the Hull Jubilee Nursing Association.—Mrs. Fanny Gilmore Colman, of Clifton Hall, Clifton, Bristol, left £500 each to the Children's Hospital, St. Michael's, Bristol, the Children's Convalescent Home, Clifton-road, Weston-super-Mare, the Orthopædic Hospital, Grove-road, Redland, Bristol, Bristol Benevolent Institution, and Dr. Barnardo's Home.—Mr. James Bibby, of Holm Hill, West Kirby, Cheshire, left nearly £10,000 to charities, including £1000 each to the Northern Hospital, Liverpool; St. Paul's Eye and Ear Hospital, Liverpool; the Convalescent Home, West Kirby; and the National Children's Home and Orphanage; £500 each to the Cottage Hospital, Hoylake, and the Lear Home, West Kirby.—An anonymous donor has sent a gift of £10,000 to King Edward's Hospital Fund for London.

Special Articles.

ROYAL INSTITUTE OF PUBLIC HEALTH.

WHITSUNTIDE VISIT TO PARIS, AIX, AND VICHY.

THE successful study tour organised last autumn by the Royal Institute of Public Health[1] to the Swiss tuberculosis institutions has been followed up by a visit to the Paris hospitals and to two of the more famous French inland watering places in which upward of 150 Fellows of the Institute and their friends took part. The programme was arranged by Dr. Gustave Monod of Vichy, with the assistance of a reception committee, of which Prof. Léon Bernard was president, and the travelling arrangements were in the able hands of Sir Henry Lunn, who accompanied the party to Paris.

PARIS.

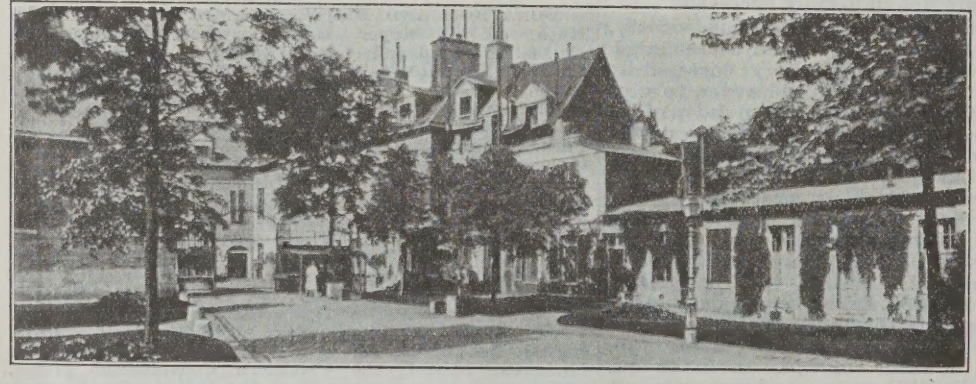
The visit of the Institute to Paris was inaugurated by a dinner to the leaders of the medical profession in Paris, given by Sir Henry Lunn on Sunday, May 20th, at the Palais d'Orsay, which was attended by more than 200 persons. Sir Henry Lunn, who presided, gave expression to the pleasure that he felt at bringing together so many French and English medical men and women who were anxious to know each other and to learn from each other. Prof. Henri Roger, Dean of the Medical Faculty, proposed the health of the King, and Sir Thomas Oliver followed with a tribute to the pioneers of medicine in France, to which Prof. Bernard replied. Dr. Monod, in proposing the health of the chairman, explained, in a neat little speech delivered in perfect English, that the development of the Paris hospitals was hindered by the lack of pecuniary support, due to their association with the State; the hospitals of London, on the other hand, based as they were on voluntary assistance, lacked for nothing—a view for which he was subsequently taken genially to task by some of his colleagues. Amongst the French guests present were Prof. Henri Hartmann, Prof. Jean Sicard, Prof. Georges Guillain, Dr. Paul Garsaux, Dr. Etienne Braissaud, Dr. Desfosses, Dr. M. Robineau, Dr. Pierre Quiserne (of Bagnoles de l'Orne), Dr. Raoul Bensaude, Dr. Paul Ferreyrolles (representing the International Society of Medical Hydrology), and Dr. Louis Blanc (of Aix-les-Bains).

Monday opened with a visit to *La Pitié*, a hospital with 1000 beds on the pavilion system, modernised just before the war. Here Prof. Henri Vaquez received the party and conducted them to a lecture theatre, where the veteran Prof. Jules Babinski demonstrated an admirable film dealing with cerebellar tumours and illustrating many of the characteristic features in diagnosis. In the same theatre a demonstration was given of heart sounds transmitted, after electrical magnification by means of two loud speakers, to large audiences. Dr. Lutembacher, who was present, introduced the film, but left the loud speaker to deliver the lecture in his own voice.

A group taken under the statue of the anatomist Bichat in the forecourt of the Paris Faculty of Medicine.

Photo by E. C. Templier.

At the *Salpêtrière*, which was next visited, Prof. Guillain, the director, conducted the party to Charcot's lecture theatre, where films were shown of myopathy and of Little's disease. A visit was afterwards paid to the Charcot library, containing, besides the priceless collection of neurological books and manuscripts, many interesting relics of the master, including some little humorous sketches made on scraps of paper as people sometimes draw on their dinner menus.



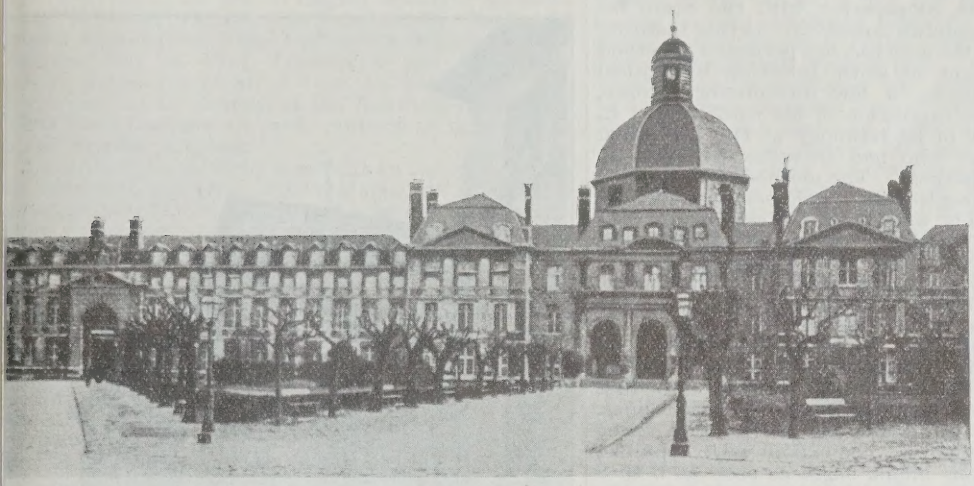
A leafy thoroughfare in the grounds of the Hôpital de la Pitié.*

In the afternoon Dr. Louis Martin and his colleagues took the party round the Hôpital *Pasteur*, which is not, as are the other hospitals, a unit of the Assistance Publique, but was founded in 1888 by international subscription as a memorial to the discoverer of the prevention of rabies. Here there is no isolation in

[1] THE LANCET, 1927, ii., 824; Jan. 14th, pp. 94, 99.

* The five illustrations of Paris hospitals are adapted from photographs in an official volume of the Assistance Publique.

separate wards, but all manner of infectious diseases are treated on the cubicle system, a central corridor allowing the friends and relatives of patients to see and greet them without actual contact. The road



The 17th-century chapel of the Hospice de la Salpêtrière.

was then crossed to the Pasteur Institute, where a wreath was laid on Louis Pasteur's tomb, and in Prof. A. Calmette's absence one of his co-workers delivered a short address on the B.C.G. antituberculous vaccine, his remarks being translated by Dr. L. Field Robinson. This vaccine, administered by the mouth to new-born infants, is regarded as free from risk and able to confer immunity at least up to the age of 5 years. It is now being placed free of charge at the disposal of all maternity hospitals, dispensaries and social organisations in Paris. Work is now being done on subcutaneous administrations.

On Tuesday morning at the Hôpital *Laënnec* a demonstration was given by Prof. Bernard and Dr. Ed. Rist, of the tuberculosis unit, initiated there in the year 1910 on the suggestion of Sir Robert Philip. Dr. Rist frankly admitted that their work at first had no great success, owing to an attempt to do too much, but opportunity came with the war when a private association of visiting nurses offered their services to the hospital dispensary, and other dispensaries were started throughout the department. The French, he remarked, were the most conservative nation in the world, and nothing but a war could have led to such a development. Wards and dispensary being under the same direction, continuity was ensured and patients were never lost to sight. They had inherited from Grancher the system of ensuring the survival of the offspring of tuberculous mothers by separating them at an early age. The child welfare problem had not then been tackled, and Grancher's work began with children over 3 years of age. But Bernard, with the coöperation of Prof. Alex. Couvelaire, undertook the double problem. The consumptive pregnant woman, admitted to the Laënnec, was sent to the Clinique Baudelocque for her confinement, the infant being separated from her immediately after birth, artificially fed for a few weeks in a special department, and then brought back to the Laënnec. If then the cuti-reaction was negative, the infant was sent to one or other of the welfare centres in the villages of central France under medical and nursing supervision. Each centre of 50 children includes a milk station, and is visited periodically by Bernard or his assistants. Contacts are also taken in the hospital but kept apart on a separate floor, the mothers sometimes being allowed to continue nursing the child, wearing a special mask during the act of suckling. The hospital, said Dr. Rist, now has a teaching centre for visiting nurses and post-graduates; the clinical material was ample, for the number of patients treated at the dispensary had risen to 34,000 in the year. Along with Edinburgh and Cardiff, the University of Paris has now recognised a special chair of tuberculosis. With regard to X ray work, every patient, he said, was examined several times during the course of treatment, coördination being ensured by the clinicians being their own radiologists.

The next hospital visited was the *Necker*, with 480 beds, made famous by the fact that it was in its wards that Laënnec discovered auscultation. Prof. Sicard gave a lantern demonstration of lipoidol: first in its harmlessness to experimental animals when injected into the venous system; secondly, in its application to the diagnosis of spinal tumours and affections of the bronchial tree; and finally, as a treatment for fibrositis in its various manifestations. He was followed by Dr. Robineau, who showed on the screen the treatment of fractures by means of bony screws and metal

One of the old wards for incurables in the Hôpital Laënnec.

sleeves, illustrating his thesis that union should be perfect if only complete immobility can be secured.

In the afternoon a tour of the military medical school of the *Val-de-Grâce* was made under the combined tutelage of the Abbé and of the representative of Méd. Inspect. H. Rouvillois. Founded by Anne of Austria, mother of Louis XIV., the hospital has a church full of antiquarian interest, cloisters of rare beauty, and a fascinating museum of war material embracing many campaigns down to the Great War.

The military training is not superposed on the medical, but the student at the end of his first year of medical study enters the school and becomes a soldier.

A visit was then paid to the *Institut Prophylactique*, founded in 1916 in coöperation with the State for the extinction of syphilitic infection. At this Institute Dr. Arthur Vernes, the director, has perfected a method for the measurement of leutic infection by optical methods. After saying a few introductory words, Dr. Vernes left the exposition of his work to Dr. E. Ofenheim, director of bacteriology at the Lewisham Memorial Institute, who had travelled to Paris by aeroplane for the purpose. The method, he said, was one which left nothing to human judgment or error, and was superior in this way to the Wassermann test. More than 100,000 patients had passed through the Institute; there were now 100 centres in France, and 41 countries which had adopted the syphilimetric method. Uncontrolled treatment of syphilis had resulted too often in increasing the incidence of complications, and the syphilimetric method of Vernes afforded the opportunity of an exact control of treatment, so that it was now possible to conduct the course of treatment and dosage on exact lines. The Institute, he said, had no use for the terms secondary and tertiary in connexion with syphilis; cerebro-spinal lesions might begin as soon as 6 to 8 weeks after infection, and it was essential for the disease to be treated continuously on a well-defined plan. After the lecture the ingenious instrument was demonstrated and questions were put as to the evidence for the assumption that the opacity of

Cloistered entrance to the Hôpital Necker.

the serum is an exact criterion of progress in the treatment of the disease.

Wednesday morning was fully occupied by a visit to the Hôpital *Cochin*, which, founded in 1780, has been almost entirely rebuilt, and now ranks among the newest of the Paris hospitals. The visit gave a welcome opportunity of witnessing the methods of teaching clinical medicine in the Paris faculty, and especially those of Prof. Fernand Widal, at whose instance the visit was paid but who was prevented by illness from being present. In Paris students who have completed their preliminary study of chemistry and biology are at once brought into contact with

Street frontage of the Hôpital Cochin.

patients, for "medicine," said the lecturer, "is a practical trade." The morning begins at 9 o'clock with a short theoretical lecture on each of the great clinical syndromes in turn; next comes an hour in the wards with an assistant to superintend, although each student has to work with his own hands, eyes and brain. During the third hour Prof. Widal performs the complete examination of a single patient. "Superficial examination is," he says, "the chief origin of faulty diagnosis," and he prefers to paint one complete clinical picture each day. As an example was shown a patient who had pure asthma without nervous or endocrine symptoms, susceptible to cat's hair, and subject to frequent hæmoclasic crises. Later the party was conducted round a remarkably well-equipped genito-urinary department.

In the afternoon Prof. Roger received the Institute at the *Faculté de Médecine*, when parties were conducted in groups round the lecture theatres and laboratories. Prof. Hartmann took the opportunity of setting out the aims of the A.D.R.M., of which he is president. This is an association, founded six years ago, for the development of medical relations between France and allied or friendly countries. The association works under the presidency of Prof. Roger, with a patronage committee comprising the heads of the medical profession in Paris. The office, known as the Salle Béclard, is convenient of access on the first floor of the faculty buildings, and here visiting medical men and women are sure of finding exact and precise information as to where they can satisfy their needs. During the last twelvemonth 127 visitors have come to Paris to study surgery or gynæcology, 80 general medicine, 52 obstetrics, and other subjects in smaller proportion. Fourteen came to gratify their curiosity as to laboratory work, and 50 desired to know how they could enter for the full medical curriculum and become qualified to

ractise medicine in France. They included representa-tives of at least 30 different countries or nations. 'he Paris faculty decided last year to organise a eries of post-graduate congresses in English with a iew of diverting the flow of English-speaking students om Vienna and Germany to Paris and the provincial 'rench universities. The endeavour is making slow rogress, but as Prof. Hartmann put it, "petit oisson deviendra grand si Dieu lui prête vie," and was evident to Fellows of the Institute that many f the Paris teachers are well equipped to take classes n the English language.

A number of the party went out to the aeroport at *e Bourget* to witness a demonstration of the caisson neumatique of Dr. Garsaux, which is used to reproduce nder experimental conditions the effects of cold and ltitude on airmen.

VICHY.

On Thursday the party left Paris by special train for 'ichy, a run of five hours, the latter half of which is p the fertile valley of the Loire and then of its ributary the Allier, punctuated with old châteaux nd the creamy-white milch cattle seen there alone. n May the journey is throughout a riot of colour ith the yellow broom in full flower. They were eceived on arrival by Mr. Baugnies, chairman of he Compagnie Fermière of Vichy, to which the baths re leased, and by representatives of the local medical ociety, and taken to the Carlton Hotel. At 8 P.M. gala dinner was given in the Salle des Fêtes of the rand Casino, at which Mr. Baugnies, who presided, as supported by Dr. P. Jardet, past president of he medical society, Dr. R. Durand-Fardel, Dr. Guinard, r. E. Willemin, Dr. L. Chabrol, and Dr. Monod. peeches were brief and witty, and the evening ended leasantly with an entertainment by Parisian artistes.

On Friday morning after a visit to the Vichy-État astillerie, at which the natural salt is obtained by

A group taken at the entrance to the Etablissement Thermal, Vichy.

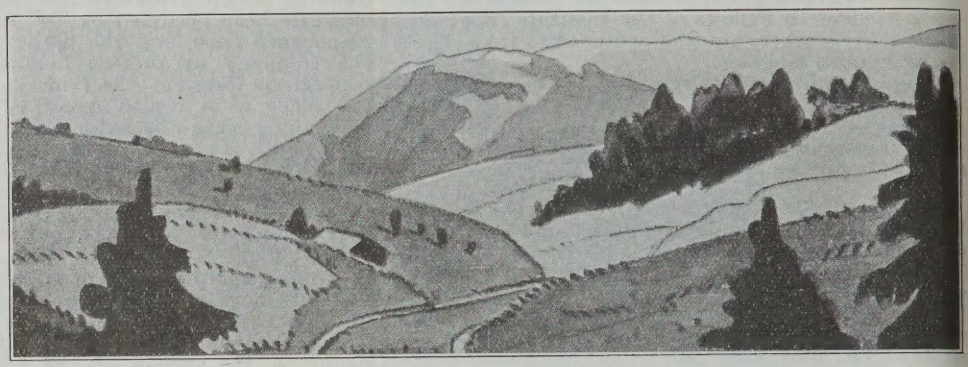
Photo by Mougins Co.

vaporation in vacuo and put up plain in packets and s elegant barley-sugar lozenges, a film was shown t the Vichy-Ciné room illustrating the principal actors of the Vichy cure and the surroundings in hich it is taken. In the afternoon the party was ivided into sections, each of which was conducted ound the new Thermal Establishment by one or other of the local medical fraternity. Vichy, it seems, although well enough known as the *vicus calidus* from Roman times, remained a small thermal town until its glorification in the years 1861–66, when Napoleon III. chose it for his place of residence. It was he who redeemed from the swift-flowing but errant Allier the semicircular strip of land which is now a magnificent wooded park. Napoleon's chalet-dwelling which overlooks the park has for the last 40 years been occupied by Dr. Willemin. It was in Napoleon's time that the baths were first leased to the company at present holding them, to whose courageous foresight the remarkable development of the place as a health resort is largely due. The company's lease was extended last year to run until 1970, and it is proposed to begin at once with the construction of a second thermal establishment, with all the essential equipment, but on lines less lavish than those of the existing house. A large swimming pool and gymnasiums are also in the contemplated programme.

The Vichy waters are plutonian rather than neptunian, and originate, it is believed, from a series of faults in the volcanic strata which are characteristic of the Auvergne. There are five natural springs of which the temperature varies from 16° to 42° C., rising to the surface of the ground within a few hundred yards of one another. There is much subterranean pressure behind them, and one or other of these springs would still, if undaunted, rise above the surface and provide a geyser of no mean appearance, as indeed must have been the case in pre-Roman times. Hotter springs up to nearly boiling-point exist in the near neighbourhood. All these waters have essentially the same composition, the temperature depending solely upon the length of sojourn in the 1000-feet thick layer of marl which overlies the volcanic stratum through which the water rises. Alongside the Celestins spring lies an enormous rock, some 350 by 30 by 20 metres, out of which the water appears to rise, the fact on the contrary being, as Dr. Willemin points out, that the rock has arisen from the water rather than the water from the rock. The composition of this great rock is quite unrelated to the marl in which it lies, and it owes its origin to a gradual accretion of deposit from the cooling water

through the ages. All the waters, too, are practically isotonic with the blood serum, the total mineralisation being roughly 0·7 per cent., a point of some therapeutic importance; the presence of helium and argon along with certain colloid metals is further evidence of their deep origin.

The essential Vichy cure is, of course, the treatment of gastric and hepatic disorders by the systematic drinking of warm carbonated water, and the typical sight is the never-ceasing throng around the springs in the glass-roofed pavilions, each patient bringing his or her own mug or glass to take the prescribed dose of water. The usual course is of 3–4 weeks, and although the residents only number some 20,000 there is an annual influx of more than 150,000 visitors. Apart, however, from the water-drinking, Vichy has considered it prudent to provide all manner of baths and treatments available at other spas; the balneo-therapeutic, gymnastic, and electro-medical equipment compare favourably with those at any continental spa.



A characteristic view of the foothills of Mont Revard at Aix-les-Bains.

Aix-les-Bains.

The journey to Aix-les-Bains was continued on Saturday in the special train which brought the party to Vichy. The cross-country journey proved of unusual interest with the climb out of the Loire Valley into that of the Saône, the transit of Lyon, and the remarkable route up the Rhône Valley to the beautiful lake of Le Bourget, on the north shore of which the Romans discovered hot sulphur springs and built around them the very elaborate system of baths which has only been laid bare during the last few years and is still being excavated. The reception at the station was by the Mayor of Aix, Mr. Henri Clerc, who, when free from official duties, is a distinguished author and dramatist, and after the guests had been allotted to their hotels, they were received by representatives of the local medical society at the thermal establishment and conducted round the baths. It is hardly necessary to dwell on the douche-massage, or Aix douche, which is now a familiar item in the thermal bathing of any well-equipped spa, but the Berthollet cabins were new to many of the party. In them the hot sulphur water, falling from a height, becomes pulverised to produce a warm vapour bath at a temperature of about 42° C., in which the patient stays for 5–10 mins. before or after the massage douche. This bath is also used locally, the spray being directed for 20 mins. on the affected parts by *cornets* surrounding them, the application often being followed by dry massage.

Later in the afternoon, in the Town Hall, Dr. L. Bertier, this year's president of the medical society, gave a short but very comprehensive address on the curative waters, and the local arrangements for hydrotherapy. The baths, he said, were known and visited by the Romans. There were two springs, known as the sulphur and alum sources, both highly radio-active, the former containing a kind of alga known as *baregin*, which facilitated the douche-massage characteristic of Aix treatment. The bathing establishment was owned by the French Government, which put in their own director in charge, and thanks to his initiative there was an early prospect of building an entirely new bathing establishment on the site of the old Roman baths, for which the plans had been put out to competition among architects throughout France. In Aix they were employing 200 masseurs and masseuses, who were taught the elements of anatomy, and who were themselves of necessity of robust constitution, as they worked in the baths from 5 A.M. till noon every week-day. The supply of water to the baths was practically inexhaustible, which was just as well since each douche-massage used up 400 gallons of water, and an enormous volume was required to produce the Berthollet spray, which was a characteristic feature of Aix treatment. The cases coming under medical care of Aix included all forms of chronic rheumatism and arthritis, whether infective or not, neuritis, lumbago, fibrositis, and gout. Dr. Bertier remarked that his colleagues and himself attended at the baths every morning in order personally to supervise the treatment which they prescribed, and to modify it in detail as need arose. This was, he thought, unique at Aix.

In the evening a banquet was given at the Grand Cercle under the presidency of the Mayor, followed by a display of fireworks in the semi-tropical gardens. In an eloquent speech Mr. Clerc sketched the development of Aix, the modern history of which began with the building of the first thermal establishment in 1776 by King Victor-Amédée III. and the popularising of its beauties by the historian and poet, Alphonse de Lamartine. On Sunday the whole party was the guest of the P.L.M. Railway, which conducted it by cog-wheel railway (the earliest of its kind in Europe), or by automobile, to the summit of Mont Revard (5070 ft.) where weather conditions were favourable for a perfect view of Mont Blanc and the mountains of Savoy. Some of the party made the descent on foot in the company of Dr. Forestier, junr., learning from him much of local history and customs. In the afternoon the Zander Institute was visited, and the evening closed with a performance of Charles Dickens's "Cricket on the Hearth," presented by the Société des Casinos.

On Monday morning a visit was paid by steamboat on the Lac du Bourget to the royal abbey of Haute Combe. Here there is a little enclave of Savoyard territory within present-day France, at the foot of the Dent du Chat, in which lie buried the Princes of the House of Savoy. On the way to the lake a halt was made at the laboratory, founded by Lord Revelstoke, which serves a double purpose as public health institute for the control of water and milk, and of a place for clinical investigation of the cases under the care of practising doctors. A glance at the Marlioz establishment, where the hot alum-spring is vapourised for inhalation, and a brief visit to the golf course concluded the official programme, after which members were free to return home or to continue their journey on one or other of several itineraries suggested by the Institute.

This account cannot conclude without a word of appreciation addressed to Dr. T. N. Kelynack, hon. secretary of the Institute, without whose continuous help and coöperation the visit could hardly have been the success which it was.

RECENT WORK ON THE PARASITIC ÆTIOLOGY OF CANCER.

By W. Cramer, Ph.D., D.Sc., M.R.C.S.,
RESEARCH ASSISTANT, IMPERIAL CANCER RESEARCH FUND.

Considerable interest seems to have been aroused in Germany by a paper read at a recent surgical congress by Prof. L. Heidenhain. In this paper Heidenhain claimed to have demonstrated the infective nature of cancer by the experimental transmission of malignant new growths from man to animals, and his results have been accepted by some writers as proof of the parasitic ætiology of cancer. The detailed evidence, on which this conclusion is based has now been published. In a beautifully got-up monograph,[1] Prof. Heidenhain, who is the son of the famous histologist Rudolf Heidenhain, records in great detail the results of the extensive and careful experimental investigation which leads him to conclude that cancer is caused by a living virus. The experimental evidence on which this important conclusion is based consists of the occurrence of tumours in mice which had been inoculated with human cancerous material. The human material was used either fresh or after having been subjected to autolysis. The results are tabulated very clearly and illustrated by a large number of good microphotographs, so that the reader is placed in the position to assess the evidence critically.

The Experimental Evidence.

It is obviously difficult to review briefly the large amount of material presented by the author, but the following data may be given as representing the essential facts. The investigation began in March, 1924, and was concluded in August, 1927. The mice which had been inoculated were allowed to live. Those which died were submitted to a careful post-mortem examination, followed by histological examination of material likely to be neoplastic. The recorded cases of cancer therefore apply only to those animals which died naturally at various periods after inoculation. Most of the experiments were made by inoculating human material; the following figures refer only to these experiments.

Of 1165 inoculated mice 69 developed tumours—about 6 per cent. Taking all his inoculation experiments in which animal and human tumours served as the source of the inoculation, he finds 83 tumours in 1601 inoculated mice—a percentage of 5·2. Of these there were 45 carcinomas and 27 sarcomas; a small number of mice had two tumours. The majority of the tumours did not arise at the site of inoculation. There was no relationship between the type of human tumour inoculated and the type of tumour which developed. Inoculation of a human sarcoma of the humerus, for instances, is followed by a mammary carcinoma in the mouse; a carcinoma of the skin in man, when inoculated into mice, is followed by a sarcoma of the femur in the mouse. The tumours developed in varying intervals after the inoculation—the average interval being about one year.

The Incidence of Spontaneous Tumours.

The question which obviously arises as determining the value of the experimental evidence is: Did these tumours arise as the result of the inoculation? Or would they have arisen anyhow—in other words, are they spontaneous tumours?

Here Prof. Heidenhain has been guilty of a serious error. He quotes a paper by Ascher published in 1912, who attributes to E. F. Bashford the statement that the spontaneous occurrence of cancer in mice is in the proportion of 1:2500—a figure obviously much smaller than that found in Heidenhain's experiments, and on that figure is based the conclusion that the tumours in Heidenhain's series arose as the result of the inoculation. No reference is given to Bashford's statement, which was made in 1905 in the second Scientific Report of the Imperial Cancer Research Fund. Bashford, however, there carefully qualified the statement by saying that it refers only to young mice and predicted that, as in man, a much higher incidence of cancer in mice will be found if animals of all ages are examined. This prediction was fulfilled in a paper by J. A. Murray, published in 1911 in the Fourth Scientific Report of the Imperial Cancer Research Fund. In examining the incidence of cancer in 562 female mice of all ages, of which 92 died with malignant new growths, Murray found that the same statistical considerations apply to cancer in mice as in man; the incidence of cancer increases with increasing age. Murray gave the following table:—

Months.	Neoplasms.	
	Of all tissues.	Of tissues other than mamma.
Less than 9	5	—
From 9–11	12	1
,, 12–14	18	2
,, 15–17	28	2
,, 18–20	12	2
,, 21–23	9 =29	1 =6
Over 24	8	3
Total	92	—

If Heidenhain's results are tabulated in age-groups in a similar way one finds that the incidence of tumours in his inoculated mice increases with increasing age, as they would do if they had arisen spontaneously.

Months after inoculation.	Number of cases of cancer.
3½–5½	5 mice.
6½–9	14 ,,
9½–15	23 ,,
15½–25	27 ,,

The age of mice as supplied by breeders is usually about 2 months. If one assumes that Heidenhain's mice were about 3 months old when inoculated the increased incidence with increasing age corresponds closely to Murray's table, the last group of Heidenhain's 15–25 months comprising the three last groups of Murray's table. The total percentage of the incidence of cancer in Murray's population of female mice from birth to death is 16·3 as against Heidenhain's two figures of 6 per cent. and 5·2 per cent. in a population of mice aged from 3 months till death. A strict comparison is not possible, because Heidenhain's data do not supply the number of mice living at the different age-periods as Murray's do. Murray's figures refer to female mice only in which the bulk of the tumours is represented by mammary carcinomata. No statement has been found in Heidenhain's monograph to indicate the sex of the mice used for inoculation. Assuming that he used an even number of male and female mice and making further the extreme assumption that the incidence of cancer in male mice is so low as to be negligible, Heidenhain's figure for female mice would still fall considerably below that of Murray's figures.

A comparison of Murray's and Heidenhain's tables leaves little doubt that the incidence of cancer in Heidenhain's inoculated mice is no greater than that of normal mice of corresponding age and that his tumours were spontaneous new growths.

The only difference in Heidenhain's group of mice is the high percentage of sarcomata. Murray's figures refer to female mice only in which the percentage of mammary carcinomata is very high, while sarcomata are rare. Murray, moreover, excluded from his figures lymphomatous tumours and adenocarcinomas of the lung as being of doubtful malignancy. Heidenhain includes both these types of tumours. In fact, in his group of sarcomata there are eight cases of a condition described by him as sarcomatosis endothoracica,

[1] Uber das Problem der bösartigen Geschwülste. By Prof. Othar Heidenhain. Berlin: Julius Springer. 1928. Pp. vi. + 153. 41 figs. M.28.

which from his description is clearly a lymphomatous condition strictly confined to the thorax.

Perhaps the most extensive series of observations on the occurrence of spontaneous tumours in mice is contained in the papers published by Miss Maud Slye. This author records "5000–6000 malignant neoplasms" among 61,700 necropsies—that is to say, over 8 per cent.[2] This percentage is again higher than that found by Heidenhain in his inoculated mice. In an earlier paper Miss Slye[3] recorded 87 cases of sarcoma in a series of 12,000 autopsies on mice dying at all ages. She especially emphasised that only tumours of undoubtedly sarcomatous nature were included and that lymphomatous conditions were omitted. The number of sarcomata found by Heidenhain in his stock appears to be distinctly higher than that observed by either Murray or Miss Slye. This is the only significant difference between the recorded observations on the occurrence of spontaneous tumours in mice and the tumours appearing in Heidenhain's series.

Conclusion.

Since the frequency of malignant new growth in Heidenhain's series is not greater than the number of spontaneous tumours recorded in the observations of Murray and Miss Slye, Heidenhain's experiments cease to have the significance which he attaches to them. This conclusion has also been reached by B. Fischer-Wasels[4] in a recent detailed critical review of Heidenhain's results.

MEDICINE AND THE LAW.

Infant Life Protection.

IT is notorious that distinguished lawyers have often been at fault in the making of their wills. They are equally fallible, it appears, in the framing of proposals for legislation. Lord Darling who, after many years of public service as a High Court judge, is now giving valuable help in the improvement of the law, has introduced an Infanticide Bill which ignores that aspect of fœticide which affects the obstetrician confronted with an obstructed labour. The need of amending the law has long been known; Mr. Justice Talbot lately drew attention to it afresh at Liverpool. It is a felony (punishable by penal servitude for life) to procure miscarriage. It is murder to kill a fully-born child. But to destroy a child while it is being born and before it is fully born is no offence whatever. To remove this anomaly Lord Darling's Bill proposes that "whosoever shall in the course of the delivery of a woman of a child wilfully do any act from which the child dies before having an existence separate from that of its mother shall be . . . liable on conviction on indictment to penal servitude for life." This rather clumsily framed proposal takes no account of the fact that occasions may arise when a practitioner has to choose between losing the life of the mother and deliberately destroying the life of the child. As the Lord Chancellor pointed out on the second reading of the Bill, such cases, if they arise, must be safeguarded and protected by legislation. The Bill has therefore wisely been referred to a Select Committee in order that this point, among others, may be considered and the anxiety of the medical profession and of midwives removed. Oddly enough, exactly the same mistake was made 20 years ago. In 1908—a year when infant life protection attracted much attention in Parliament—Lord Robert Cecil introduced a Bill to remedy the same anomaly and made the same omission. Any person (so ran the Bill of 1908) who shall wilfully destroy the life of a child during the birth thereof and before the same shall have been fully born, shall be guilty of felony, and, being convicted thereof, shall be liable to penal servitude for life. In Standing Committee the omission to take account of the medical profession was made good. "Any person who shall wilfully destroy" was altered into "Any person who shall destroy . . . in such a manner that he would have been guilty of murder if the child had been fully born," and the following proviso was attached, "Provided that a person shall not be guilty of an offence under this Act who, by means employed in good faith for the preservation of the life of the mother of the child, destroys the life of any such child during its birth." These words provide a perfectly proper safeguard, and something of the kind is essential if the present Bill is to pass into law.

The Existing Legal Position.

The legal position is fairly clear. There is neither murder nor manslaughter unless the person killed is a person in being. To kill an unborn child while still in its mother's womb is no offence. This doctrine is laid down in Coke's Institutes and is good law still. If the child is born alive and afterwards dies by reason of some felonious act done to it in the mother's womb or in the act of birth, the person who committed that act is guilty of murder. So thought Sir Edward Coke, and, though Lord Hale was inclined to disagree, modern English authorities support Coke's opinion. The last edition of Jervis on Coroners cites a case in point. A man was sentenced at Leicester assizes 30 years ago to 18 months hard labour for manslaughter of a female child; he had struck his wife about the face and body during July; in August the child was born and was found to be severely bruised; it died a few days later. The Court of Criminal Appeal, it is believed, would confirm such a conviction to-day. It is important, of course, to know the legal meaning of "fully born." The law does not deem a child to be fully born—so as to be the possible subject of murder or manslaughter—until its whole body is brought alive into the world having an independent circulation and breathing (or capable of breathing) with its own lungs so that it possesses (or is capable of possessing) an existence independent of connexion with the mother. It has been held that a child was completely born though the umbilical cord was not severed. It has been held, too, that a child born alive can be the subject of murder though it has never breathed. It has been held also that the fact that the child had breathed was not conclusive proof that it was born alive, since it might have breathed and none the less have died before birth.

The Gap to be Filled.

Meanwhile there is a gap between the offence of procuring abortion and the offence of killing a fully-born child. That gap must somehow be filled. Lord Robert Cecil's Bill was refused facilities 20 years ago on the ground that it could hardly be described as non-contentious. It should not be difficult to re-draft Lord Darling's Bill or to equip it with safeguards which are reasonable and universally acceptable, except possibly to those whose religion does not permit the sacrifice of the child in order to save the mother's life. Even from this quarter opposition would hardly arise, since protection must obviously be afforded to medical men who take a different view of their duty.

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE: ANNUAL DINNER.

THE annual dinner of this Society, which was presided over by Prof. J. W. W. Stephens at the Café Royal, Regent-street, London, on June 20th, marked the twenty-first anniversary of the Society. The principal guest was the Rt. Hon. L. S. Amery, M.P., Secretary of State for Dominions and for the Colonies, the other guests being Dr. E. Brumpt, Professor of Parasitology in the University of Paris; Dr. W. H. Welsh, Professor of the History of Medicine in Johns Hopkins University; Sir George Maxwell, Deputy Chairman of the Colonial Medical Research

[2] Jour. Cancer Research, 1927, xi., 54. [3] Ibid., 1917, ii., 1.
[4] Münch. med. Woch., June 1st, p. 149.

Committee; Col. T. R. StJohnston, Administrator of St. Kitts, Leeward Islands; Admiral A. Gaskell, Sir Matthew Fell, Air Vice-Marshall D. Munro, Directors-General respectively of the Medical Department of the Navy, Army, and Air Force; Sir James Berry, President of the Royal Society of Medicine; Mr. H. W. Carson, President of the Medical Society of London; Sir Walter Fletcher, Sir James Michelli, and Sir Squire Sprigge, the Editor of THE LANCET.

After the loyal toasts had been proposed from the chair, Prof. Stephens welcomed Mr. Amery, stating that though he might have addressed him as soldier, sailor, linguist, and administrator, he preferred to welcome him as a student of tropical medicine. Mr. Amery's deep interest in the subject had covered more than a quarter of a century, and he was as devoted to the question of proper colonial administration as was the late Joseph Chamberlain, to whose conceptions the two great schools of tropical medicine in London and Liverpool were due. The recent foundation of the Committee of Medical Research, he said, formed an example of Mr. Amery's recognition of the need for that scientific investigation which was the mainspring of medicine and the direct object of the Royal Society of Tropical Medicine and Hygiene. It would be both the pleasure and the duty of the Society to support the Colonial Secretary in all efforts to combat the scourge of tropical diseases.

Mr. Amery, in proposing the toast of the Society, said that no one could occupy the position that he held without recognising not only the intrinsic importance to the State of tropical medicine, but also the urgent necessity of its scientific maintenance for the welfare of the whole of the Empire, where the political and economical importance of the Dominions form a standing element of the British Commonwealth—a fact that was increasingly in evidence. None of the many responsibilities of the Colonial Office, he held, was of greater importance than that where it functioned as a ministry of health. There was a time when the diseases of the tropics were regarded as inevitable concomitants of a tropical climate, for it was only in the last generation that we had learnt that tropical diseases were not more inevitable than the diseases of our own climate and that there was no reason why the tropics should not be made habitable, not only for the natives but for the white men resident there. Once that fact emerged it cast a new light upon our commercial possibilities as well as upon our moral responsibilities arising from Imperial control. Referring to the work of Joseph Chamberlain, he said it was on Nov. 25th, 1898, that the Secretary of State for the Colonies informed the Colonial Office that he had under his consideration the importance of reducing the mortality of tropical climates, and that he had decided, after consultation with the medical authorities on the means of action, to establish a school of tropical medicine in London (soon to be doubled in Liverpool, through the generosity of Sir Alfred Jones) while he also proposed to encourage scientific research in tropical diseases. An act of greater merit had been done by no Secretary of State. Mr. Chamberlain was more immediately concerned with the problem of the white administrators and traders, but the Colonial Office now realised that the problems of white and native health in the Empire were inseparable—the mosquito and the tsetse-fly linked them together. Our conscience and our interest alike were steadily bringing us to the belief that in the health of the native peoples must be sought the master-key for their happiness and prosperity. There was no form of native education so calculated to civilise or strengthen a sense of personal responsibility as education in health, and no theme for mutual coöperation between Government and Government more fruitful, politically as well as physically, than coöperation in the fields of hygiene and sanitation. The medical training of the natives and the evolution among them of a health conscience were now prime objects among statesmen, and this ideal had led to a great expansion of our Empire. When Joseph Chamberlain first realised the importance of tropical health there were on the Gold Coast 21 medical officers; to-day there were 100; in Nigeria 7, to-day 161; in Ceylon 34, to-day 363; in Fiji 8, to-day 68. This was an indication of the development which had taken place in the Colonial medical services, the strength of which to-day was 1700 officers, and it was growing every year. With this growth there had been a wider recognition of the importance of securing men of high personal and professional attainments, while improvement both in salaries and in general conditions of service had been steady. He hoped that in the near future they would be able to create something in the nature of a single Colonial medical service. Just before the war the ordinary salary of medical officers in East and West Africa was from £400 to £500 a year; to-day the salary for West Africa was from £660 to £960, and in East Africa £600 to £900. Before the war the head of the medical department of the Gold Coast received, including duty pay, £1200 a year, while to-day he received £1960. The creation of larger organisations like the West African Medical Service meant greater openings for the right medical men to secure the best posts. A single colonial medical service would enable the best brains in research or administration to be available for those Colonies which needed them most, irrespective of the actual immediate revenue of the Colony.

The general level of medical work in the Colonies, continued Mr. Amery, had never stood so high as it did to-day, while the increased number of officers available enabled more attention to be paid alike to research and the prevention of disease; for colonial medical officers were not left continuously struggling to overtake disease after it had occurred. It was also more possible now to give leave to officers for the purposes of study. Further attention was also being paid to colonial nursing. Anyone who lived under tropical conditions realised the value of good nursing, and he congratulated all those who had devoted themselves for so many years to supplying the Colonial Empire with a sufficiency of fully qualified nurses. Among the striking advances that had been made in tropical disease work were the new hospitals at Singapore, at Accra on the Gold Coast, and at Mulago in Uganda; the forming of a medical school in West Africa, the Sleeping Sickness Commission organised by the League of Nations, and the improvement of the work on malaria—the results of activity at the Singapore base directed against malaria would have been amazing to the last generation. Mr. Amery also quoted figures showing the wonderful fall in the death-rate among European officials in West Africa, and although he had no exact figures to cite in regard to the native population, there was no doubt of the steady improvement in their health, while confidence in our methods and interest in the work itself had also been established among the natives. He concluded by referring to the need for coördination among different countries, and mentioned the fact that two years ago he appointed a chief medical officer at the Colonial Office because he saw that it was necessary for someone to keep in touch with the medical services throughout the Empire, and to link the work with the outside field of scientific knowledge and personal ability which this country afforded.

Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine, in replying to the toast, referred to the help which the Society had received from its past presidents, Sir James Cantlie, Sir William Leishman, and Sir Patrick Manson, and from the Secretaries. Over £3000, he said, had been raised towards the provision of a mansion house for the Society. Not since the days of Joseph Chamberlain had there been a Colonial Secretary like Mr. Amery, who, it might be said, had breathed a new spirit into the Colonial Office, especially in regard to medical work. In addition to the appointment of a chief medical officer to the Colonial Office, Dr. A. T. Stanton, a Fellow and Member of the Council of the Society, we owed to

him the foundation of the Colonial Medical Research Committee, with which Sir Walter Fletcher had been so closely associated. "Mr. Amery and his able coadjutor, Mr. Ormsby-Gore," concluded Dr. Balfour, "are believers in the personal touch, familiarising themselves with the conditions obtaining in many parts of our far-flung Empire. May I express the hope that it will be possible to extend this personal touch and appoint liaison officers in matters medical and sanitary to act as helpers and advisers to men toiling in isolation and under difficulties."

Lieut.-Colonel W. P. MacArthur proposed the toast of "The Guests," making special reference to Prof. Welsh, who had recently accepted the chair of medical history in the Johns Hopkins University.

Sir Squire Sprigge, replying on behalf of the guests, referred to the assistance which the Colonial Office were always ready to give to those who desired information that would be of practical use.

Dr. P. H. Manson-Bahr, proposed the health of "The Chairman," to which Prof. Stephens briefly replied.

INDIAN MEDICAL SERVICE:

THE ANNUAL DINNER.

THE annual dinner of the I.M.S., which took place on Wednesday, June 20th, at the Trocadero Restaurant, London, under the presidency of Sir Havelock Charles, was well attended, the following officers being present:—

Major-Generals: B. N. Deare, A. A. Gibbs, G. F. A. Harris, R. W. S. Lyons, Sir R. C. MacWatt, J. B. Smith.

Colonels: J. Crimmin, V.C., H. M. Cruddas, C. M. Goodbody, T. A. Granger, C. R. M. Green, J. A. Hamilton, H. Kellock McKay, A. J. Macnab, R. A. Needham, J. J. Pratt, R. G. Turner, F. Wall, C. N. C. Wimberley.

Lieut.-Colonels: A. W. Alcock, F.R.S., W. G. P. Alpin, J. Anderson, S. R. Christophers, Sir Frank Connor, A. G. Coullie, D. G. Crawford, J. M. Crawford, R. H. Elliot, G. H. Frost, H. Greany, J. B. Hanafin, E. C. Hepper, E. C. Hodgson, E. V. Hugo, Dalziel J. B. Hunter, S. P. James, Davenport I. Jones, J. Kirkpatrick, W. H. Leonard, T. M. Macrae, J. Masson, F. O. N. Mell, A. Miller, F. O'Kinealy, J. S. O'Neill, Sir Leonard Rogers, F.R.S., E. R. Rost, S. Browning Smith, R. Steen, Ashton Street, W. A. Sykes, D. W. Sutherland, C. Thomson, G. Sloane Thomson, W. H. Thornhill, E. L. Ward, D. P. Warliker, A. C. Younan.

Majors: Norman Briggs, Sir T. J. Carey-Evans, H. S. Cormack, A.W. Duncan, P. K. Gilroy, N. H. Hume, M. L. C. Irvine, J. C. John, R. N. Kapadia, Rigby G. Lynn, V. Mahadevan, N. B. Mehta, R. V. Morrison, M. A. Nicholson, M. J. Quirke, M. A. Rahman, J. Rodger, E. C. A. Smith, H. Tait Caldwell, D. R. Thomas, G. Y. Thomson, F. R. Thornton.

Captains: M. P. Atkinson, D. P. Bhargava, J. E. Gray, A. C. Hayden.

Lieut. F. T. Harrington.

Dr. N. G. Horner, the Editor of the *British Medical Journal*, was also present as a guest.

It is a feature of these dinners that there should be no speeches, and the speaking was confined to a brief address from the Chairman, wishing prosperity to the I.M.S. In his speech Sir Havelock Charles briefly alluded to the record of the Service before and after the war, and especially to the vast fields for medical research and administrative capacity which lay before the officer of the I.M.S. In reference to the critical times which the Service had gone through recently and the reforms which have been instituted to meet them and to make the career of the officers attractive to the medical profession, the Chairman emphasised the fact that now more than ever an efficient medical service was of the highest importance to the future welfare and progress of India.

At the close of the proceedings Colonel J. Anderson and Colonel J. J. Pratt were asked to accept a piece of plate as a token of the appreciation of the officers of the I.M.S. on their retirement from the position of hon. secretaries of the Dinner Committee, which they had held ever since the inauguration of the annual dinner.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the 1927 health statistics of a group of districts:—

Name of district and estimated mid-year population.	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.		
		All causes.	Tuberculosis.	Cancer.	Respiratory diseases with influenza.	Heart disease.	Infant and neonatal mortality.	Diarrhœa, &c., under 2 years.	Maternal mortality from childbirth.
Brighton C.B. (140,700)	13·3	13·5	0·91	1·80	2·4	2·4	60/27	4·2	5·7
Chesterfield R.D. (84,320)	21·0	12·2	0·63	1·33	3·2	1·7	82	2·8	6·2
Watford B. (52,580)	15·7	10·3	0·89	1·12	2·0	1·5	53/36	0·0	1·2
Torquay B. (37,400)	15·2	16·2	0·93	1·84	3·2	2·9	51/24	7·0	5·3
Plympton St. Mary R.D. (23,700)	14·4	10·7	0·71	1·21	1·6	2·0	48	0·0	2·8
Chingford U.D. (12,920)	19·8	9·5	0·38	—	—	—	46	0·0	3·9
Thedwastre R.D. (8,301)	14·8	14·3	1·10	1·68	—	4·2	57	0·0	0·0
East Stow R.D. (6,644)	15·6	12·6	0·3	2·0	2·3	2·0	38	19	0·0
Stowmarket U.D. (4,317)	16·2	9·3	0·46	1·4	—	0·9	71	0·0	0·0

C.B. = County Borough. B. = Borough. U.D. = Urban District. R.D. = Rural District. — = No information.

Brighton.

Dr. Duncan Forbes says that for the first time in a normal year the deaths in Brighton exceeded the births—namely, by 19. The same thing occurred in 1917 and 1918, but these were war years, and, in 1918, influenza carried off 367 persons. The diminution of births does not relieve the housing difficulty, because it does not reduce the number of families, nor does it relieve the education committee, because school accommodation has to be found for the larger number of children now born in the outskirts. Dr. Forbes gives a review of the question of slum areas. As long ago as 1877, Dr. Taaffe, the then medical officer of health, reported about 27 slum areas in the eastern part of the town. No action was taken, however, until about 1890–1900, when 459 houses were demolished in three areas, together involving 2158 residents. The decline in the building of new houses began in 1906 when 305 were built, and during the three years 1911–13 only an average of 37 per year were built. In 1918 the corporation began building houses, and have since erected 1294. In 1919 it was estimated that 3000 houses were required to deal with overcrowding and slum clearance. In January, 1928, the position was that two unhealthy areas, each housing some 1000 persons, had been represented, but the rate of progress in slum clearance depends on obtaining better (and cheap-rented) houses for the population of these unhealthy areas. Three schemes to assist housing and rehousing are referred to. Under the Small Dwellings Acquisition Act a proposed Brighton scheme sought to provide three-bedroomed houses of the non-parlour type at a weekly rental of 16*s.* 10*d.*, which is compared unfavourably with a Cambridge scheme to provide similar houses at a rental of 14*s.* 2*d.* A second proposal is to promote private enterprise by guarantees of 90 per cent. of the cost

to building and industrial and provident societies, but this proposal does not favour the Brighton resident anxious for a house to the exclusion of the immigrant. It has been found that houses for the working classes are frequently for sale with vacant possession, and as these are often bought by non-residents they bring no relief to the housing problem. A third proposal under consideration is for the corporation to acquire the houses of tenants willing to occupy new corporation houses and to recondition them for slum tenants, and that the difference between the district valuer's valuation and the purchase-price should be defrayed from the current rates.

Dr. Forbes advocates that the children resident for considerable periods in institutions should be immunised against diphtheria. He also gives examples of the danger of grouping young children. Twenty-four cases of measles occurred in one of the creches with two deaths. Two deaths from whooping-cough occurred in a house where there were five "nurse" children who were infected by the foster-mother's own child. The danger of such happenings weighs heavily, he says, against the advantages of creches, nursery schools, and infant welfare centres. If such occurrences were all recorded it would do much to support the old idea that the best place for a child under 5 is at home with its mother, even if that home be a poor one. Most of the ante-natal work is done for women who have booked with the Sussex Maternity and Women's Hospital, which admitted 74 corporation patients during the year. There were 15 notified cases of ophthalmia neonatorum, of whom one baby lost the sight of one eye.

Of 67 samples of milk examined for tubercle, 10, or 14·9 per cent., gave a positive result. As the result of following-up by the county authorities five cows were dealt with under the Tuberculosis Order, but in as many as four instances no infecting cow was found, probably owing to removal or slaughter before the farms were visited. When tuberculous carcasses of calves or pigs are found at the abattoir information is sent to the medical officer of the district from which they come, and as a result one or two tuberculous cows have been eliminated from herds.

Successful proceedings were taken against three vendors for milk below the standard; a shopkeeper, licensed to sell bottled milk, was fined for selling "loose" milk, and a vendor and his "rounds" boy were both fined because the latter filled a milk-bottle in the street. One sample of cream-cheese contained only 5·2 per cent. of fat, while a sample of lard was found to consist entirely of vegetable fat. Nine samples of "pure" cream were found to contain small amounts of boric acid. A full year's working of the orthopædic scheme has confirmed its great value and full use is made of the scheme by the infant welfare department. The steady improvement in the teeth of the school-children is shown by tabular statements. There is a gradual decrease in the percentage of children referred for treatment and an increase in the percentage accepting treatment.

Chesterfield R.D.

Dr. Herbert Peck states that coal-mining is the chief industry and, with quarrying, gives employment to nearly half the occupied males. The new houses erected during the year numbered 622, 299 municipal, and the rest built with State assistance by other bodies or persons. A scheme for the conversion of privies would have made more progress if the water-supply had been better. There is a large and increasing number of huts on wheels, which pass as caravans, and are built for persons who wish to evade the payment of rates. They are not moved from place to place, but are used instead of proper dwellings. Stricter by-laws are needed for their control. Deaths in the first quarter of the year from influenza and respiratory diseases heavily increased the adult and infant mortality, and a large number of schools were closed during January and February when influenza was rife. There were 21 non-notified tuberculosis deaths, equal to 39 per cent. of the total deaths from this cause.

Watford.

Dr. W. J. Cox reports that of 150 samples of milk examined, 8, or 5·3 per cent., were found to contain tubercle bacilli, and 19, or 12·6 per cent., were found to contain blood or pus cells. Dr. Cox urges the need for the supervision of watercress beds, so as to ensure the purity of their water-supply. He points out that watercress is a valuable food, rich in its vitamin content, and that a considerable quantity is grown in his county (Herts). During the year one bed within the borough was closed because it was considered to be liable to contamination from the public highway. The housing problem still causes a difficulty, and there are over 700 names on the waiting-list. Municipal schemes have, however, relieved the shortage, and private enterprise is making itself more felt, so that there is an improvement. The corporation, since 1920, have erected 1125 houses to relieve the shortage and, in addition, 114 non-parlour houses to rehouse the tenants of the first of the slum areas cleared. A second slum area was demolished in March, 1928, after an unsuccessful appeal by the owners against the clearance of the area. In addition to the houses which they have actually erected, the corporation have issued loans to the amount of £346,250 under the Small Dwellings Act for the erection of 582 houses, and of £93,775 under the Housing Act of 1923 for the erection of 131 houses, both by private enterprise. Dr. Cox points out that 104 of the 825 births were not notified. The Home for Ailing Infants admitted 28 cases (of which six were from outside areas) for an average stay of 93 days. Excellent results are obtained in securing treatment among the school-children. Thus, in only six out of 202 dental cases and 11 out of 129 "tonsils and adenoids" was no action taken by the parents. Dr. Cox emphasises the need for a much more effective system of after-care than that at present provided for mentally defectives after they leave school. The Watford Joint Isolation Hospital serves a population of over 84,000. The cases of scarlet fever admitted are kept for at least six weeks, even in uncomplicated attacks. The chief event of the year was the admission of 44 cases of paratyphoid B from Hemel Hempstead and district. The cases, as a rule, resembled moderately severe cases of ordinary typhoid. At the beginning of the year the hospital contained 14 cases of supposed German measles from Sunshine House, the home for blind babies at Chorley Wood. This institution was visited by two epidemics—namely, in November and December, 1926. Practically all the children and all the staff were affected. The allegation that the second epidemic was due to children being sent home after the first epidemic before they were free from infection led to a Ministry inquiry, which exonerated the hospital from all blame. The illness, which affected the children, in spite of its great infectivity, was of a very mild type, and it was difficult to say whether it was scarlet fever or German measles.

Torquay.

Dr. Thomas Dunlop refers to the many advantages of his district, both as a holiday resort and for invalids, especially those who suffer from asthma or chronic bronchitis, and he states that Torquay is the only British seaside health resort with a complete equipment for spa treatment. Last year was a bad one for sunshine, but Torquay held a fairly good position with 1650·4 hours, which is 138 hours below its average for 28 years.

There is no maternity hospital, but it is expected that the new Torbay Hospital will provide lying-in wards and also facilities for an antenatal clinic. The extension of the borough will enable sufficient drainage to be provided for the isolation hospital, and it has also been decided to provide new administrative and ward accommodation and to install electric light.

The reconstruction of the refuse destructor is well in hand and will enable even temporary tipping, with its fly and rat nuisance, to be dispensed with. The acquisition of powers to obtain an additional supply of water from the South Teign will render the district free from all menace of water shortage even in the driest season.

The Ministry of Health has now sanctioned the clearance of the Pimlico unhealthy area, and the council has made good progress with the housing scheme, 195 houses having been completed and occupied during the year. Since 1920 the council have erected 381 houses, but there are still many applications from necessitous cases. The council supply Grade A (tuberculin-tested) milk for mothers and infants and also in all their refreshment rooms. Dr. Dunlop hopes that a venereal diseases clinic will be provided at the new Torbay Hospital. The council at present pay the railway fares to Exeter of patients who need this assistance. A public abattoir is needed, and the fact that 328 pigs' heads were condemned on account of tuberculosis during the year shows that meat inspection is not what it should be in the surrounding districts. The percentage of pigs affected with tuberculosis was 12. An inspection of the kitchens of the hotels has been instituted under a local Act, and certificates issued in respect of those which comply with the conditions laid down. In July an addition was made to the meteorological records by taking observations of ultra-violet light. The mean daily units of ultra-violet rays as ascertained by the acetone methylene-blue gauge for the last six months of the year were: July, 6·0; August, 5·6; September, 3·75; October, 3·15; November, 2·23; and December, 0·84.

Plympton St. Mary R.D.

Dr. S. Noy Scott says the year has been marked by steady progress in building activity and by the preparation of the Yealm Head water scheme. Originally it was intended to construct a dam at Yealm Head, but now it is thought a more suitable scheme will be obtained by the construction of three weirs across the Yealm and its tributaries. Dr. Scott says the general average of comfort is good, that there is not much poverty, and that a large number of the householders are owner-occupiers. The occupations are not, as a rule, adverse to health.

Chingford U.D.

Dr. Malcolm Barker shows that the accessibility of his rapidly growing residential district has been increased by a new arterial road and an omnibus service. The population at the Census of 1921 was only 9481. The new sewage plant has been so constructed as to be capable of expansion. Automatic compressed-air ejectors raise the sewage from the new low-level sewer 23 ft. After passing through sedimentation tanks it is automatically sprayed on to coke-breeze filters, then passes through humus tanks, and is finally discharged into the Ching brook as a highly purified effluent. Scavenging is made difficult by the erection of isolated dwellings on unmade roads. The refuse destructor is to be enlarged. There are 37 dwellings not connected to the public sewers, 26 of which drain into cesspools. Dr. Barker recommends that some of the watercourses should be piped, and also points out that the numerous pools in the district form breeding-places for mosquitoes and gnats. Under the Chingford town-planning order of 1927 the whole of the district except the built-up portions is included for town-planning purposes.

Thedwastre, East Stow, and Stowmarket.

Dr. S. C. Hounsfield submits a report for these three districts, which are served by one isolation hospital.

Thedwastre R.D. is principally agricultural, but contains one bacon factory and two small brickworks. It is divided into small farms, few of which exceed 300 acres, and there are no large estates. The water-supply is chiefly from wells, and during the year samples from the wells of new houses in three areas were found, upon analysis, to be polluted. The district exports milk and, though the dairies are generally satisfactory, greater cleanliness is needed as regards the cow-sheds and their approaches. The provision of 38 new houses by the council has relieved the housing situation considerably.

East Stow R.D.—The council took action with regard to the insanitary condition of Haughley village. They ordered the discharge of sewage into the street gullies to be discontinued, required the conversion of privy middens into pail closets, and the provision of cesspools for liquid sewage. They undertook the emptying of the cesspools and provided the necessary apparatus. The pail system of closets in the schools is said to be better than formerly, and earth is being more generally used. An epidemic of influenza reached its height in February with several severe cases, and there were three deaths from it. Forty-four new council houses have been erected, but more renovation work of existing houses is needed.

Stowmarket U.D.—The county medical officer made a routine inspection in October and his report commented favourably on the water-supply, the sewage system, and the housing scheme. The council have decided to enforce the provision of galvanised sanitary bins for all houses. There were two deaths attributed to influenza, and during the first week in February some 300 people were laid up from this cause.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 16TH, 1928.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 282 (last week, 365); scarlet fever, 1691; diphtheria, 896; enteric fever, 70; pneumonia, 1005; puerperal fever, 41; puerperal pyrexia, 99; cerebro-spinal fever, 9; acute poliomyelitis, 7; acute polio-encephalitis, 2; encephalitis lethargica, 24; dysentery, 10; ophthalmia neonatorum, 119. No case of cholera, plague, or typhus fever was notified during the week.

The cases of small-pox were notified from the following 20 counties: London, 24 (last week, 49; Paddington 1, Marylebone 19, Southwark 1, Wandsworth 3),; Bedford, 8; Buckingham, 4 (Aylesbury 3, Newport Pagnell 1); Chester, 2; Derby, 36; Durham, 56; Hertford, 2 (Bishop's Stortford 1, Watford 1); Lancaster, 15; Lincoln, parts of Holland 5; Norfolk, 2; Northumberland, 9; Nottingham, 1; Soke of Peterborough, 3; Stafford, 17; Surrey, 1 (Mitcham); Warwick, 5 (Birmingham 2, Coventry 3); Yorks, North Riding 2; West Riding, 56; Glamorgan, 14; and Monmouth, 20.

The number of patients in the Infectious Hospitals of the Metropolitan Asylums Board on June 19th-20th was as follows: Small-pox, 75 under treatment, 5 under observation; scarlet fever, 1770; diphtheria, 1950; enteric fever, 18; measles, 711; whooping-cough, 144; puerperal fever, 18 (plus 17 babies); encephalitis lethargica, 67; poliomyelitis, 1; "other diseases," 25. At St. Margaret's Hospital there were 21 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was one death from small-pox, 2 (0) from enteric fever, 37 (11) from measles, 7 (2) from scarlet fever, 29 (4) from whooping-cough, 27 (5) from diphtheria, 40 (6) from diarrhœa and enteritis under two years, 43 (3) from influenza. The figures in parentheses are those from London itself.

The two fatal cases of enteric fever occurred at Bath and West Bromwich. Of the 26 fatal cases of measles outside London 6 were reported from Liverpool. Of the 25 fatal cases of whooping-cough outside London 6 occurred at Liverpool and 3 at Gateshead, while the figures for Glasgow and Dublin during the same week were 8 and 4. Five deaths from diphtheria were reported from Birmingham. The death from small-pox was notified from Coventry C.B.

Dr. E. H. Snell, the medical officer of health for Coventry, informs us that a case of small-pox (a woman) was admitted to the City's Small-pox Hospital on May 21st. The husband was advised to have the child contacts vaccinated, but failed to do so. On June 4th the four children were admitted to hospital with mild small-pox; they showed no signs of systemic disturbance. One of them, a girl, aged 9, reported by the parents to have been "a very delicate child since birth," developed acute primary pneumonia and died four days after admission; she had never been vaccinated. Dr. Snell states that the small-pox, which was classified as 'discrete (VI.),' could have had no appreciable bearing on the causation of death.

The number of stillbirths registered during the week was 301 in the great towns, including 53 in London.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdr. H. A. L. Guthrie is placed on the Retd. List.

Surg. Comdr. C. J. O'Connell is placed on the Retd. List with the rank of Surg. Capt.

Surg. Lt. A. E. Phillips to be Surg. Comdr.

H. J. McCann, R. E. P. Cohen, J. T. Rees, and S. J. Savage to be Surg. Lts.

Surg. Comdrs. J. C. Kelley to *Castor*, on recommg., and A. W. Gunn to *Pembroke* for R.M. Infirmary, Deal.

ROYAL NAVAL VOLUNTEER RESERVE.

Proby. Surg. Sub-Lieut. G. H. Bradshaw to be Surg. Sub-Lt.

Surg. Lt. W. Caithness to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Capt. C. C. G. Gibson to be Maj. (Prov.).

Capt. (Prov. Maj.) A. G. Brown retires, receiving a gratuity, and relinquishes the rank of Prov. Maj.

Capt. R. W. Chapman to be Maj.

Capt. H. J. Bensted to be Maj. (Prov.) and remains secd.

The undermentioned relinquish their commns.: Temp. Capt. J. W. Sutherland and is granted the rank of Maj.; Temp. Lt. J. W. de W. G. Thornton.

Lt. J. D. Borham, half-pay list, resigns his commn.

ARMY RESERVE OF OFFICERS.

Lt.-Col. T. C. Lauder, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. W. P. G. Williams resigns his commn.

Capt. E. G. Snaith (late Leicester R.), to be Lt. and relinquishes the rank of Capt.

ROYAL AIR FORCE.

Wing Commander H. W. Scott to R.A.F. Depot, Uxbridge.

Squadron Leaders R. W. Ryan to Central Medical Establishment; J. T. T. Forbes, to No. 3 Flying Training School, Grantham.

Flight Lt. L. P. McCullagh to R.A.F., M.T. Depot, Shrewsbury.

Flying Officers J. J. MacAndrews and J. M. Ritchie to Headquarters, Air Defence of Great Britain, Uxbridge; and V. V. Brown, to R.A.F. Station, Tangmere.

INDIAN MEDICAL SERVICE.

Capt. D. Clyde to be Maj.

Lt. J. H. Clapp resigns his commn.

COMMISSIONS IN THE ROYAL ARMY MEDICAL CORPS.

A limited number of commissions in the Royal Army Medical Corps are being offered to qualified practitioners under 28 years of age. There will be no entrance examination, but candidates will be required to present themselves in London for interview and medical examination. Applications should reach the War Office not later than 20th July. Further particulars may be obtained from the Under-Secretary of State, War Office (A.M.D. 1), Whitehall, London, S.W.

Correspondence.

"Audi alteram partem."

THE VITAMIN A CONTENT OF COD-LIVER OILS.

To the Editor of THE LANCET.

SIR,—In 1925 you published in THE LANCET[1] an article on the selection of cod-liver oils for medicinal use in which I emphasised the high vitamin value of the oils prepared in Great Britain and Newfoundland. My article evoked a prompt reply from Prof. E. Poulsson, of the University of Oslo, in which he challenged the statement that in general Newfoundland oils possess a higher vitamin potency than those from the chief centre of the Norwegian industry. He presented data derived from tests on 30 samples of Norwegian oil bought openly in chemists' shops, and 12 samples of Newfoundland oil procured by the Norwegian Commercial Information Bureau. Considerable play has been made by those directly or indirectly interested in the sale of Norwegian oils of the fact that I have not answered Prof. Poulsson's criticisms of my article and of certain of the conclusions reached by Dr. S. S. Zilva and myself as a result of our extensive study of cod-liver oils from different sources. Various forms of propaganda have come to my notice. An extreme case is represented by a statement alleged to have been made recently by "the most important agent handling Norwegian cod-liver oil in the United States," to the effect that Dr. Zilva and I were "bought up" by the Newfoundland interest and have since emphasised the superiority of the Dominion oil.[2]

I need not utilise space in your columns to expose such a malicious and untruthful report, but, though I would prefer to remain silent until the close of another investigation now in progress, an article in the May issue of the *Anglo-Norwegian Trade Journal*, the official organ of the Norwegian Chamber of Commerce in London, demands a reply. This article includes a statement, attributed to Prof. Poulsson, that I had made no rejoinder to his letter in THE LANCET of Feb. 6th, 1926, and goes on to say that this is a question of a scientific author contradicting himself and his colleagues without producing new data and without giving any explanation. It is incorrect to say that there has been no reply to Prof. Poulsson's challenge. My colleague, Dr. Zilva,[3] has pointed out that in absence of a fuller description of the method of testing employed by Prof. Poulsson it is difficult to interpret the figures presented by the latter.

It is important to remember that at the time at which this controversy took place the differentiation between the vitamins A and D had not been satisfactorily established. None of the biological methods of assaying the vitamin value of cod-liver oil then in vogue took account of the disturbing influences of vitamin D. In this sense the methods employed respectively by Prof. Poulsson and ourselves are comparable; both were rendered obsolete by the introduction of improved technique in 1924. Incidentally Prof. Poulsson was still advocating the use of a faulty method in July, 1925, in a memorandum to the Permanent Standards Committee of the League of Nations Health Organisation, and it appears that he actually employed it in a series of comparative tests reported this year, though his method was unanimously rejected as defective by a conference of British experts in December, 1925.[4]

An explanation of the discrepancies between the results recorded by Prof. Poulsson and by Dr. Zilva and myself has, however, to be sought. At first sight it might appear that the differences could be attributed to the relatively small number of samples that had

[1] THE LANCET, 1925, ii., 679.
[2] Fishing News, April 21st, 1928, p. 35.
[3] THE LANCET, 1926, i., 463. [4] Ibid., 1928, i., 148.

been examined, and that Dr. Zilva and I had by chance encountered either a series of Norwegian oils of relatively low vitamin value or a series of unusually rich Newfoundland oils. For my part I cannot accept this view. During the past five years I have examined a very large number of samples of cod-liver oil of authenticated origin, and I am more than ever convinced that the vitamin A values of those prepared in Scotland, Newfoundland, and Iceland are usually distinctly higher than those derived from the Lofoten area. My conviction is built up not solely on my own laboratory experience but on opinions I have gathered from many quarters. Perhaps the strongest support I could bring forward, had it not been given to me in confidence, would be the detailed evidence collected from many of the largest consumers of cod-liver oil in this country and the United States. We may be certain that commercial firms using scientific methods of assay which buy yearly many thousand barrels of cod-liver oil, would not have ceased to buy oil from Norway unless they were convinced that the product they were purchasing elsewhere, often at a higher price, was in some important respect superior. Most of the large firms to which I refer maintain laboratories in which routine animal-feeding tests are carried out on oils, and I have personal knowledge that it is on the basis of these tests that changes have been made.

I believe that the cause of the discrepancies between the results of Prof. Poulsson and those of Dr. Zilva and myself is to be found in the differences between the techniques employed. That such differences may be responsible for disturbing results is apparent from the comparative study [5] of the colorimetric and the biological method of determining vitamin A in cod-liver oil. In the report of this study emphasis is laid on the desirability of making comparisons of the vitamin A potency of oils on the basis of the doses required to restore the same rate of growth. The alternative method of comparing the rate of growth upon the same dose of oils is condemned as being incapable of yielding trustworthy results. Perhaps I should point out that whereas the relative values given in this report for the results of my tests were based on the response of growth on 10 mg. daily doses, tests were also made on doses of 2, 4, 8, and 24 mg. of each of the oils.

By itself the report was inadequate to establish the reliability of the colorimetric method (based on principles first introduced by Dr. O. Rosenheim, F.R.S., and myself some years ago), but the conclusion was reached that this method afforded information consistent with that derived from the biological tests.

My own experience with the colorimetric determination has led me to believe that it is probably a more reliable method of assay of vitamin A than the biological test, particularly when the improved form devised by Carr and Price is employed. If I am correct in this view, the results of the past few years indicate even more clearly than those formerly obtained the relatively low vitamin value of the cod-liver oil from the Lofoten area. I refer solely to oils of undoubted origin and history, which are known not to have been blended with oils procured from other areas. Blending, as is well known, often occurs, particularly when the production in one area falls much below normal. I understand that considerable amounts of Icelandic oil have been sold for blending elsewhere during this year's season. I admit to some hesitation over relinquishing the view that spawning reduces the vitamin value of the liver oils, but I am now satisfied that, as far as vitamin A is concerned, the chief cause of variation is probably the quantity and quality of the food of the cod.

Whatever may be the cause of the difference in results, and I am hoping that the investigation with which I am now occupied will throw light on it, I am not satisfied that Prof. Poulsson has disproved the statement that the vitamin A value of the Lofoten oils is, generally speaking, considerably less than that of the oils made in Scotland, Newfoundland, Finmarken, and Iceland.

I am, Sir, yours faithfully,

J. C. DRUMMOND.

Department of Physiology and Biochemistry,
University College, London.
June 19th, 1928.

[5] Ibid., 1928, i., 148.

THE AMBULATORY TREATMENT OF VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—I am glad to find that your valuable series of articles on Modern Technique in Treatment now includes a contribution dealing with the ambulatory treatment of varicose veins. Mr. Payne's description of the injection method in your issue of June 9th and 16th is remarkably lucid and should be of great assistance to medical men who are anxious to commence this treatment. A careful perusal of your contributor's work stimulates one, however, to raise one or two points which appear worthy of discussion.

Mr. Payne mentions the discomfort of boot-pressure in relation to malleolar veins which have been chemically thrombosed. As two of my cases have demonstrated, a much more annoying complication is liable to follow injection of these veins—namely, painful œdema of the ankle, which sometimes persists for months in spite of massage. Where unsightly masses of malleolar veins are to be obliterated I now secure this by introducing the sclerosing medium into a vein on the dorsum of the foot. In many instances such veins are not varicose themselves, but they will bear the fluid to those which are. Whilst agreeing with Mr. Payne that the surest method of obliterating all varices is to commence injections distally; when very large femoral ampullæ exist, and the patient's susceptibility has been tested, I invariably take advantage of the reversed flow in these veins to make a proximal descending injection of 2 to 3 c.cm. In this way I have frequently succeeded in obliterating all the varices on the inner side of the thigh and leg by means of a single injection. Finally, with regard to the temperature of the sclerosing fluid, it is not generally known that this has an important bearing upon the reaction following injection. In my own clinic I now regularly employ quinine-urethane solution which is kept at a constant temperature of 105° F., and by so doing I have obtained successful results in several cases which had previously resisted thrombosis.

I am, Sir, yours faithfully,

Swansea, June 19th, 1928. C. J. CELLAN-JONES.

SUBCUTANEOUS EMPHYSEMA DURING PARTURITION.

To the Editor of THE LANCET.

SIR,—The cases of subcutaneous emphysema during parturition, described by Dr. Salmond and Dr. Wells recently in your columns (April 14th, p. 757, and May 12th, p. 988), renew an interest which I have taken for over 20 years in this rare and interesting complication of labour. In all the cases which I have seen recorded it has been presumed that the air had been forced into the tissues after rupture of some pulmonary vesicles. But the record has always stated that no pulmonary lesion had been found.

A case published in the *Stethoscope* (a Bristol medical school journal) in November, 1904, suggested to me an alternative pathology. The report of the case reads as follows:—

"... When the head came in contact with the perineum the pains became stronger. ... At this stage the patient's eyelids suddenly became swollen and she complained that she could not see out of her left eye. The swelling rapidly spread over the face."

Commenting on this case at the time, I wrote :—

"I think the course taken by the emphysema gives a clue to the seat of the lesion. I have seen three cases of fracture of the lacrymal bone, in all of which surgical emphysema occurred, beginning by filling out the eyelids on the side involved and spreading with every attempt to blow the nose, until in one case the malar region and cheek were also involved. In the other two cases the patients were instructed not to blow the nose forcibly, and the emphysema did not spread. Now, when we remember how exceedingly thin the lacrymal bone may be, and how easily broken (in one of my cases the patient had fallen and struck her nose, but not sufficiently hard to produce a black eye), it seems likely that the straining in the case reported had caused a slight laceration of the bone and of the mucosa covering it and continued bearing-down efforts had forced air, first into the eyelids and from there over the extensive regions Dr. Smith details."

Dr. Wells, in describing his case, speaks of the emphysema reaching from the nipples "upwards." But I suggest that it would be worth while interrogating both his patient and Dr. Salmond's with a view to discovering whether, in very fact, the emphysematous swelling did appear at first below and travelled upwards or vice versa.

I am, Sir, yours faithfully,

Bradford, June 22nd, 1928. JAMES PHILLIPS.

ANATOMICAL NOMENCLATURE.

To the Editor of THE LANCET.

SIR,—In your annotation on Anatomical Nomenclature (THE LANCET, May 26th, p. 1081) you express doubt as to whether useful results could be anticipated from a conference between clinicians and anatomists in anatomical nomenclature. Surely it is more important for the student fresh from the dissecting-room to understand his clinical teacher than for a professor of anatomy in Australia to use the same nomenclature as his brother in Berlin. If a committee is to try to evolve order out of the chaos induced by the Basle terminology, let the teachers of clinical medicine and surgery be adequately represented on that committee. When I was on leave in London last year I found that a 20-year-old copy of "Gray's Anatomy" cost more than a brand new one; which speaks for itself, or rather, for London.—I am, Sir, yours faithfully,

H. WILLIAMSON,

Quetta, Baluchistan, June 4th, 1928. Capt., I.M.S.

Obituary.

HENRY POTTINGER KEATINGE, C.M.G., M.B. DURH., F.R.C.S. ENG.,

LATE MEDICAL DIRECTOR, SCHOOL OF MEDICINE, CAIRO.

WE regret to announce the death of the distinguished officer, Dr. Henry Pottinger Keatinge, so long associated with medical developments in Egypt. His death occurred at his residence in Jersey on June 21st, within a few weeks of his sixty-eighth birthday.

Henry Pottinger Keatinge, a son of General R. J. Keatinge, V.C., was born in 1860 and was educated at Uppingham School, proceeding thence to Guy's Hospital in 1879. From Guy's Hospital he qualified as M.R.C.S. in 1883, and proceeding to the University of Durham graduated in medicine there in the same year. His opportunity of active service came promptly with the Egyptian operations of 1884, and from that year for the following six years he served with the Egyptian Army, saw much campaigning on the frontiers, and obtained the Osmanieh Order, the bronze star, and the medal with three clasps. In recognition of this distinguished service he was appointed in 1890, to an official post in the Cairo School of Medicine, where he did excellent work, both professional and administrative. In 1908 he was elected a Fellow of the Royal College of Surgeons of England under Regulation 5, and in 1913 was appointed C.M.G. With the outbreak of war he became the Director of the Cairo Medical School and of the Kasr-el-Ainy Hospital, and for distinguished services in the latter respect was more than once mentioned in despatches and received the Medjidieh Order. With the cessation of hostilities he retired from the Egyptian Government service with a fine record of administrative activity, for which he received the Order of the Nile. Since his retirement he had lived in Jersey.

ARCHIBALD MASON JONES, M.D., CH.B., F.R.C.S. EDIN.

Dr. A. Mason Jones, whose death, at the age of 45, took place on June 11th, was a native of Skewen, in Glamorganshire. He received his medical education at the University of Edinburgh, qualifying M.B., Ch.B. in 1909, and M.D. in 1911. He worked in Edinburgh as clinical assistant to the aural department of the Royal Infirmary, and then settled in general practice at Barry, near Cardiff, despite the handicap of a cardiac affection. He held a commission in the R.A.M.C. during the war, and on the cessation of hostilities, decided to devote himself to laryngology and otology. He accordingly studied for, and obtained, the diploma of F.R.C.S. Edin., and after filling the posts of house surgeon and clinical assistant in the ear and throat department of the Royal Infirmary, Cardiff, obtained a position on the staff as assistant surgeon, and early this year succeeded to the full surgeoncy on the retirement of Mr. D. R. Paterson. He became aural specialist to the Cardiff Education Authority and, in addition to his special work, he continued to act as demonstrator of anatomy at the Welsh National Medical School. His work was always painstaking and thorough, and he proved himself a loyal colleague and a valuable teacher. There is little doubt that he overtaxed his strength and brought on the cardiac troubles which caused his premature death. He was popular with his patients and colleagues, who view with regret the early termination of a promising career.

ROYAL MEDICAL BENEVOLENT FUND.

THE Royal Medical Benevolent Fund endeavours to help the widows of medical men who are living in penury, to assist orphans who are faced with hunger, and to support medical men who in the last days of their lives are in need. An urgent appeal is made for subscriptions and donations, as funds are badly needed to continue this work. Cheques should be sent to the hon. treasurer, Sir Charters Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1. At the last meeting of the committee 47 applications for assistance were considered, and grants amounting to £792 voted, making the total sum of £5536 in grants this year. This sum is considerably larger than the amount voted during the corresponding period of last year, which shows that increased demands are being made upon the Fund. Of the many applications considered, the following are short notes on two of the cases relieved :—

Mrs. X., an old lady of 72. Her husband died this year at the age of 92. He had held a post as medical officer of health and had to retire in 1919. Although the post carried no pension, he was granted £350 a year under the complimentary title of consulting medical officer. For nine years of retirement this old couple lived on £350 a year. On the doctor's death this payment ceased and the widow was left without a penny. Of her three sons, the eldest suffers from a war disability; he is only able to earn £50, but contributes £25 towards his mother's maintenance. The second son was badly hit in the war, and is now a clerk in Canada and cannot help. The youngest is farming in the Colonies, is married, and has his own family to keep. Voted £36 in four instalments.

Mrs. Y. Her husband was killed in an accident and she was left with four boys. The practice was sold, and with the proceeds she tried to run a boarding-house, which unfortunately failed. Realising what she could out of this failure she rented a house and took in lodgers. Then a devastating and unexpected blow fell upon her. Her husband had been given a loan by a friend, which had always been looked upon more as a gift than as a loan. The friend has also undertaken to pay for the education of one of the boys. The friend died recently, and the executors insisted on the repayment of the loan. The widow offered a cash payment of half the sum, but this was refused. There followed a foreclosure and all the furniture in the lodging-house was seized, the widow's last means of livelihood thereby being lost. Voted £40. With this timely help, and by the generous action of the local panel committee, the widow has been enabled to start afresh.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

ACCIDENTS IN MINES.

ON Thursday, June 21st, the House of Commons went into Committee of Supply on a vote of £116,319 for the salaries and expenses of the Mines Department of the Board of Trade, Mr. DENNIS HERBERT (Deputy Chairman of Committees) in the chair.

Commodore KING (Secretary for Mines), in introducing the Vote, said that during the last five months there had been a very pleasant reduction in the number of both fatal and non-fatal accidents as compared with last year. The death-rate for last year per 1000 persons employed was 1·09 and for the first five months of the year it had been reduced to 1·03. The death-rate per 100,000 shifts worked for 1927 was 0·52. For the first five months of this year it was 0·42. The injury-rate had also decreased. The injury-rate per 1000 persons employed was 4·48 in 1927 and 4·28 in the first five months of 1928. Per 100,000 shifts worked the figures were 1·86 for 1927 and 1·76 for the first five months of this year. He thought that this was an indication of a movement in the right direction. It appalled him to see what a large proportion of accidents could be prevented if the men used due and proper care. He was also impressed by the number of cases in the accident returns where some slight scratch on the hand or arm had, through neglect on the part of the man himself, resulted in death. That was recorded as a fatal accident, whereas if proper care had been taken the life of the injured man would have been in no danger. He asked all who were interested in the mining industry to assist his Department in the campaign of Safety First, which was being carried on throughout the mining areas. He would like to mention the institution last year of a permanent post of Medical Inspector of Mines. That gentleman was at present devoting particular attention to the question of first-aid organisation, and also to the very complex problems of possible injury to health from breathing the dust of highly siliceous rocks, such as quartzite and sandstone. Another important aspect of the health and safety work was the conduct and encouragement of research. This was done in collaboration with the Department of Scientific and Industrial Research and the Medical Research Council through the Safety of Mines Research Board, which was charged with the duty of giving general advice as to the research that should be undertaken into the causes and prevention of mining dangers and with the supervision of approved research work. A new large scale experimental station had been established at Buxton, in a central position, where it was possible for those engaged in the coal-mining industry to see what was being done to lessen danger in the mines. New small-scale laboratories were nearly completed at Sheffield, and when those were completed it would be possible to bring into closer association the small and large scale work. Roughly £50,000 a year was spent in research, quite apart from the capital cost of the new stations, and all but about £2000 of this sum came from the Miners' Welfare Fund. The Research Board had also fulfilled an important function in coördinating safety research carried on by investigators in receipt of grants at several universities. The Board had also arranged a scheme of coöperative research with the Government research organisation in the United States of America by means of an interchange of experts and by mutual arrangements for carrying out research programmes to expedite the work and to reduce the cost. This scheme, which had now been in operation for two or three years, was giving every satisfaction, and steps were being taken to extend it to European coal-mining countries.

Mr. G. HALL moved to reduce the Vote by £100.

After further debate the motion to reduce the Vote was rejected by 190 votes to 112.

THE TEA DUTY.

On Monday, June 25th, the House went into Committee on the Finance Bill, Mr. J. F. HOPE, Chairman of Committees, in the chair.

Mr. RILEY moved an amendment to Clause 1 with a view to reducing the tea duty to 1*d.* per lb.

Dr. VERNON DAVIES said that the idea that tea was a food had at last been dropped by members of the Labour Party. At the present time the working classes in this country drank far too much tea. Instead of using it in the proper manner as an infusion, and perhaps once or twice a day, they made a decoction of it and they thought that the blacker it was the better. From the health point of view he (Dr. Davies) was perfectly certain that that was bad for the community. People became nervous dyspeptics, and he trembled to think what the future of the race was going to be if the population was brought up on stewed tea four times a day. He would consider the Labour Party as better friends of the working classes if they discouraged them from drinking so much tea and tried to do something to encourage the use of milk, which would do the people very much more good.

Mr. J. H. HUDSON said that tea formed a considerable part of the diet of working-class families. It was one of the cheapest beverages they could obtain, and was necessary to make their general diet palatable. The continuance of the present tax on tea was one of the reasons why the working-class housewife left the tea-pot stewing on the hob from one meal to another. If the tea tax were removed working-class families would get tea to drink which would do them no harm.

Mr. HARDIE agreed that black tea was very bad for people to drink. He would never drink it himself, but Dr. Davies had not explained the reason why black tea was drunk in working-class homes. People who had to live on very small incomes could not afford to make tea as it ought to be made. It was a question of poverty. In order to make the tea go as far as possible in hundreds of thousands of homes, when stewing did not make the tea black enough, the housewife put in bicarbonate of soda to draw it still further. If Dr. Davies had been a proper medicine man—(laughter)—he would have taught them the proper way to make tea.

The amendment was rejected by 229 votes to 117.

On consideration of the new petrol tax,

Mr. SNOWDEN moved to reduce the tax from 4*d.* to 1*d.*

The amendment, after debate, was rejected by 237 votes to 115.

HOUSE OF LORDS.

WEDNESDAY, JUNE 20TH.

SLUM CLEARANCE SCHEMES.

THE Bishop of SOUTHWARK asked the Government how many persons in the United Kingdom were now living under slum conditions; how many had been removed from such conditions since the Armistice by slum clearance schemes; how many would be affected by schemes already approved by the Ministry of Health, but not yet carried into effect; and whether H.M. Government had any proposals to hasten the abolition or the improvement of slum property. He said the Government had been carrying out very faithfully their promise to build a large number of additional houses. The success which had been attained in this respect had indeed been remarkable. But the more successful the Government had been in building new houses the nearer they must come to the time when they had to carry out the other part of their promise—namely, to introduce legislation or measures for the clearance of slum areas. They were now in the fourth session of this Parliament. It was therefore natural and reasonable that they should ask the Government to tell them when they proposed to take the steps which were outlined from the Throne at the opening of this Parliament. It was agreed on all sides that where they had a slum they also had a higher death-rate and a lower standard of health than in any other district. He wished to ask the Government if they could give the House any information as to the number of people who were actually living under slum conditions. Unless there was some official statement on the subject exaggerated and highly coloured statements would be made, and indeed had been made time after time. He was quite certain that whatever figures were given they would show that a very large number of people were living under those conditions. Taking London alone, quite apart from the 26,000 people who had been or would be dealt with under the slum clearance scheme adopted by the London County Council, they were told that there were at least 100,000 people living under insanitary conditions. Serious as the problem was, no existing methods of dealing with the housing question were affecting to any large extent the condition of the slums. Men who were earning £3 or under a week could not possibly afford a rent of 20*s.* or 23*s.*, which was charged in many cases for the new houses, quite apart from the inconvenience and cost of moving backwards and forwards from the environs of a big town to the place where the man was employed. The ideal policy was to sweep away the rotten insanitary buildings and then build on the space which had been so cleared, but it was a very slow business. In London a number of approved schemes had not been carried out and a number of slum areas which had been condemned for years still remained as they were. He was not for the moment blaming the Ministry of Health, which was as anxious and keen on this matter as anyone else, but the Minister of Health himself recognised that progress in this respect was very slow. Every year's delay meant another year of suffering and misery and unhappiness.

Lord GORELL said that this was a matter which transcended all questions of party politics, but it seemed to him

nat there was a vast difference between the attitude of ne Conservative Party and that of the Labour Party in egard to this problem. The Government seemed to take ne view that progress was desirable, but that it was one f a great number of matters on which progress was desirable. o the Labour Party, on the other hand, the problem was bsolutely fundamental. They regarded the question of ousing and the complementary question of slum clearance s underlying every one of their social problems. They ould prefer to see every effort and all expenditure directed rst of all to clearing away these conditions, because until nat was done there was no real chance of general social rogress. It was a mistake to look upon this problem as it were wholly urban. While the greatest and most ondensed areas of slums were in the great towns, there ere slum problems in rural areas just as vital to those who ere living in those conditions.

Problems of Overcrowding and Insanitary Conditions.

Viscount GAGE, replying on behalf of the Ministry of lealth, said that the Minister of Health was very sympaetic to the points raised by the Bishop of Southwark. here were really two separate problems: one was overowding and the other was insanitary conditions; and it id not necessarily follow that because insanitary conditions ere remedied overcrowding difficulties would be solved, or ice versa. In the last year for which statistics were availble over 1,000,000 houses were inspected for defects and 3,260 were found to be unfit for human habitation. A rther 352,643, or 30 per cent. of the number inspected, ere found to be unfit in certain minor respects. The ouses, however, were presumably capable of being made fit, nd the local authorities were taking, or had taken, the ecessary steps by issuing notices and other negotiations to ecure their repair. As a result of action taken by local uthorities in 1926, 600,000 houses were repaired and put nto a correct sanitary condition. In connexion with chemes which had been already confirmed by the Minister f Health since the Armistice some 6600 new houses had een completed to replace houses demolished or to be emolished. These new houses would probably accomodate between 29,000 and 30,000 persons. If they educted the 30,000 persons for whom provision had already een made, some 39,000 persons had yet to be provided for. s indicating the considerable difficulty attending slum learance schemes he would point out that since the War 23 schemes had been submitted and 113 had so far been onfirmed. There were 20 schemes which the Ministry knew ere being considered by local authorities. If he compared his with what took place before the War he did not think hat he could be accused of self-complacency in describing as not unsatisfactory. Before the War for a period of bout a quarter of a century only 44 improvement schemes nd 28 reconstruction schemes relating to small areas were onfirmed. It must be borne in mind that these houses had ot suddenly become insanitary since the War, but that hese conditions existed long before the War. As to the uture, the Ministry of Health had before them the whole f the programme connected with the rating and valuation cheme, which would take a great deal of their time as well s a great deal of the time of Parliament. The promise to eal with slum clearances and reconditioning still held good, ut he was afraid that he could not give the dates when egislation would be introduced.

Earl BEAUCHAMP suggested that the time had come hen a new Royal Commission might be set up to go into his matter.

Modern Conditions in Slum Areas.

Lord MELCHETT said that as Minister of Health one of the roblems that was presented to him was the question of lum clearances. He agreed that more ought to be done nd that it was a scandal that in the twentieth century eople should be living under the conditions in which they ved in the slums. But there were two or three practical ifficulties which were extremely hard to solve. One ifficulty was that people who lived in slum areas were by o means so anxious to leave them as some people believed. nother difficulty was that of rehousing people close to heir work, which was a growing demand. He thought hey would have to adopt some method by which people ould be induced to live in blocks of buildings instead of isolated cottages. It was impossible to spread the opulation of great towns like London over endless garden ities, and it was equally impossible to take great industries uch as those which surrounded the Port of London and pread them all over the countryside. What was possible as to recreate in the slum areas modern conditions and nake them comfortable and healthy to live in. He hoped hat the Ministry of Health would not postpone this question r let it be interfered with in any way by the Rating and aluation Bill. Why should they not proceed on adminisrative lines? Local authorities already had very wide owers to deal with slum conditions, and really what was wanted was to make those authorities exercise their powers. There was one amendment of the law which was needed badly, because for want of it clearance schemes were being held up. The compensation which local authorities could pay to the owners of property was very unfair, and the authorities therefore hesitated to put their powers into operation. That was a matter which ought to be dealt with.

The Marquess of SALISBURY, Lord Privy Seal, said that the Government were considering whether they could not find some better way of providing a remedy than the vast schemes of slum clearance and rebuilding. They were difficult, expensive, and presented all sorts of obstacles. If they could only recondition houses which were capable of that treatment a much shorter and cheaper road would be found for achieving their aims. But like all other legislative projects that policy presented great difficulties of its own. He thanked the Bishop of Southwark for his repeated efforts in bringing this matter before the public. Nothing but good could come from those efforts, and he earnestly hoped that they might be attended with success.

THURSDAY, JUNE 21ST.

The National Health Insurance Bill was read a third time, and passed.

TUESDAY, JUNE 26TH.

THE INFANTICIDE BILL: SELECT COMMITTEE.

On the motion of Lord DARLING, the following peers were constituted a Select Committee to consider the Infanticide Bill:—The Earl of Desart, Lord Phillimore, Lord Dawson of Penn, Lord Hewart, Lord Merrivale, Lord Darling, and Lord Hanworth.

LIQUOR (DISINTERESTED OWNERSHIP AND MANAGEMENT) BILL.

On the motion for the second reading of the Liquor (Disinterested Ownership and Management) Bill, introduced by Lord BALFOUR OF BURLEIGH,

Lord DAWSON said that the principle of local option carried with it certain disadvantages, not to say dangers, of its own. Therefore, before it could be employed as a social remedy, the onus of proof lav with considerable weight on the proposer of that remedy. The last thing they wanted to do with popular government was to cheapen elections. They wanted people to regard elections in a serious light, as great occasions, when they were called upon to apply their minds disinterestedly to the problem before them. The fact of ad hoc elections for this or that matter could not but have the effect of cheapening elections in the eyes of the people. Actual experience in regard to elections for Boards of Guardians, and in connexion with the Scottish Temperance Act, showed that relatively small numbers of people went to the polls. When they cheapened elections they got abstentions and small polls. That meant that the elections got into the hands of people who were the least wise, because they were the most fanatical. The people who ran those elections were, to a large extent, people who could not manage their own affairs. Everyone interested in social reform rejoiced that they had had the very valuable experiment at Carlisle to help them, but after 12 years, with every advantage, it could not be said that Carlisle was the outstanding success that it should have been in the circumstances. Taking the test of drunkenness, there appeared to be no fewer and no more cases of drunkenness in Carlisle than elsewhere. Taken as a whole, it was not an inspiring success, nor anything that should tempt one to go very much farther. He could see no end to these ad hoc bodies. Possibly, in a very little while, they would have a new health society asking to have local option in regard to brown bread. There would be no limit to it, and it would be far better to allow the representatives of the people to decide whether or not they were to have these particular restrictions.

Legislation and Drink.

Legislation on drink proved that unless they carried the assent of the people with them they defeated their own objects. No political party had ever taken local option into its programme. There was something in human nature which refused to conform to restricted hours. Let them take the case of Sunday closing in Wales. They found charabanc parties organised on Sundays to carry large bodies of people to the non-restricted areas. What was said to be an occasional drink became an occasion for drink. In London, during the restricted hours, when there was early closing in one district at 9 P.M. and in another at 10 P.M., one could see quite a stream of people walking from one pavement to the other to defeat the law and to get their last drink. Restrictions defeated their own object unless they carried a large amount of public support.

Education and Temperance.

On the other side of the Atlantic they had a terrible problem to deal with. Although the promoter of this Bill might say that the main object of the measure was not

to promote temperance, surely he would not bring forward these far-reaching proposals unless he was assured that they were going to increase temperance. If he would ask himself what measures had done most to promote temperance in this country he would find that education and suasion had done far more than legislation. The improvement in temperance began long before the War, and the figures showed a steady improvement in that respect among the masses of the people. Look where one might, nothing was more striking than the rapid and progressive improvement in the temperance of the people. There had been a great diminution in the consumption of alcohol. He would give one set of figures which showed that in a large house in London 75 per cent. of the people who sat there on one evening were consuming no alcohol at all. The house was fully licensed, but of those who had drink the great majority took beer and light refreshment. The same sort of thing was found everywhere, and the only place where drunkenness seemed entrenched was from time to time behind the motor wheel. The statesmanlike course to pursue if they wanted to increase temperance was to study the causes which worked for temperance, and further them wherever possible. Those causes were (1) the growth of knowledge through education. The educational propaganda of the last 25 years had done a great deal, and foremost among that propaganda was the Band of Hope. Another cause was the great growth in popularity of recreation and games. Above everything else there was the love of health and fitness. There was the realisation of how good alcohol was in its right place, and how they ought not to drink too much, and there was growing up a degree of temperance which left very little to be desired. There had been a striking improvement in the public houses in this country wherever one went, with the exception of the slums. In some of the newer public houses around London food and coffee were provided, and non-alcoholic drinks, with games and amusements, and the management were not paid any commission on the amount of alcoholic drink. It was along such lines as those that they ought to proceed. At present that was discouraged by the licensing authorities, but by encouraging these houses and educating people, temperance, which was rapidly growing, would reach its goal far sooner than by drastic and restrictive legislation.

A motion by Lord BANBURY for the rejection of the Bill was carried by 67 votes to 24.

HOUSE OF COMMONS.

THURSDAY, JUNE 21ST.

Treatment of Tuberculous War Pensioners.

Sir WILFRID SUGDEN asked the Minister of Pensions whether full advantage was being taken of sanatoria attached to village settlements for the treatment of war pensioners suffering from tuberculosis.—Major TRYON replied: Treatment for pensioners suffering from tuberculosis is secured through the local health authorities, who normally make use of their own sanatoria, approved for the purpose by the Ministry of Health. This practice secures that local facilities are utilised to the full and is also consistent with the policy (so often pressed upon me) of treating pensioners, as far as possible, near their own homes. Cases of this class which are likely to be suitable for, and to benefit from, ultimate residence in a village settlement after any course of treatment required, will, I am advised, at the present time be increasingly few among pensioners whose tuberculosis is directly traceable to their war service, having regard to the stage of their complaint, age, previous occupation, habits of life, and other factors. As such cases arise, while my powers are necessarily limited in the case of this, as of all other disabilities, to the provision of the treatment required, treatment in a sanatorium attached to a village settlement may be preferable to the normal arrangements of treatment in the sanatorium of the local health authority, and I am prepared to continue to give reasonable facilities for the treatment of suitable cases accordingly.

Shortage of Water in Nantwich Area.

Mr. AMMON asked the Minister of Health whether his attention had been drawn to the serious shortage of water, with the resulting danger to public health, at Haslington, in the rural district of Nantwich; and what action had been taken by the local authority concerned and his department with a view to a more adequate water-supply being afforded residents in the district referred to.—Mr. CHAMBERLAIN said that his attention had been drawn to this matter. The local authority had under consideration a proposal for providing a further supply of water, and officers of his Department was conferring with representatives of the local authority on the proposal.

Welfare of Blind Persons.

MR. GROVES asked the Minister of Health if he had received overtures from certain local authorities appealing to him to amend Section 1 of the Blind Persons Act, 1920, so as to provide for the payment of pensions to the unemployable blind at 30 years of age instead of 50 years of age; and whether he was prepared to accept such proposal.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative, and to the second part in the negative. I may, however, add that I have requested the Advisory Committee on the Welfare of the Blind to investigate the whole question of assistance to the unemployable blind, and have issued a circular to the appropriate local authorities asking for certain information desired by the Committee for the purpose.

Feeding of Necessitous School-children.

Mr. GROVES asked the President of the Board of Education the number of school-children fed at the school centres in the West Ham, East Ham, Leyton, and Walthamstow areas for 1924, 1925, 1926, 1927, and 1928, respectively, as far as possible.—Lord EUSTACE PERCY replied: The following is the information asked for:—

Area.	1924–25.	1925–26.	1926–27.	1927–28.
West Ham.. ..	1251	1242	2789	4172
East Ham	438	351	535	500*
Leyton	134	115	272	358
Walthamstow ..	196	163	570	585

* This figure is approximate only.

Boy's Death after Vaccination.

Mr. ROBINSON asked the Minister of Health whether he had received any report regarding the death of John Flanaghan, of Keighley, aged 10, who was vaccinated as a condition of going to a boys' camp, by Dr. Villey, on May 12th, became very ill on the 26th, was unconscious on the 27th, and died on the 29th from meningitis; whether any inquiry was held into the death of this boy, who was perfectly healthy when vaccinated; and, if so, what was the result.—Mr. CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. So far as I am aware no inquiry was held into the death of this boy, but my Department have been in communication with the certifying practitioner. I am informed that no post-mortem examination was held, and that the certified causes of death were: (1) (*a*) acute meningitis, (*b*) tonsillitis; (2) vaccination.

Small-pox in England.

Mr. WALTER BAKER asked the Minister of Health the number of cases of small-pox reported in England during the present year; and in how many instances there had been fatal results.—Mr. CHAMBERLAIN replied: Cases of small-pox, totalling 6607, were notified in England, excluding Monmouthshire, during the present year up to June 16th. The number of deaths up to the end of May in respect of which small-pox appeared in the medical certificate as the cause, or one of the causes, of death, was 46. It should be added that these figures are at present provisional, and that no case of small-pox has been notified this year from a port sanitary district.

Small-pox among Vagrants.

Mr. SMITH-CARINGTON asked the Minister of Health whether, in view of the increasing prevalence of small-pox among casuals, he would consider the enforcement of a stand-still order in respect of all vagrants.—Mr. CHAMBERLAIN replied: The number of cases of small-pox among casuals has recently shown a tendency to decrease, but apart from this I am satisfied that my hon. friend's proposal, which I have already considered, would not have the effect desired.

Accidents in Mines.

Mr. BARKER asked the Secretary for Mines the number of fatal accidents and the number killed in the mines of the United Kingdom for the year 1927; the number killed by falls of roof and sides during this period; and the total number seriously injured by all causes during the year 1927.—Commodore KING replied: During the year 1927 there were 1028 fatal accidents at mines under the Coal Mines Act, resulting in 1128 deaths, of which 565 deaths were due to falls of roof and sides. During the same period, the total number of persons seriously injured by accidents at these mines was 4692.

Mr. LAWSON asked the Secretary for Mines the number of accidents, fatal and non-fatal, in the mining industry for the years 1925 and 1927.—Commodore KING replied: During the year 1925, there were 1050 fatal and 177,609 non-fatal accidents at mines under the Coal Mines Act, resulting in 1136 deaths, and disablement for more than three days to 178,060 persons. In 1927, 1028 fatal accidents caused 1128 deaths and 172,883 non-fatal accidents caused injuries to 173,449 persons.

Artificial Sunlight Treatment.

Sir ROBERT THOMAS asked the Minister of Health the number of existing centres for artificial sunlight treatment in Wales and Monmouthshire, distinguishing those established by local authorities directly, those of voluntary agencies, and school clinic light centres, respectively.—Mr. CHAMBERLAIN replied: I am informed that two local authorities in Wales and Monmouthshire have established centres for artificial light treatment, and one other local authority is about to do so. Four such centres have been established by the Welsh National Memorial Association and three by other voluntary bodies, one of which is utilised by six local authorities in North Wales. One of the centres established by a local authority is used for the treatment of school-children as well as for children under school age.

Public Motor Vehicles and First-aid Outfits.

Mr. DUCKWORTH asked the Minister of Transport whether his promised Road Transport Bill provided for the necessity of motor vehicles licensed to carry passengers being fitted with first-aid outfits; and if not, whether he would consider the desirability of making it compulsory for such outfits to be installed in all such vehicles in the interests of public safety.—Colonel W. ASHLEY replied: The Draft Road Traffic Bill which I circulated last year would empower me to prescribe the conditions with which the equipment of motor omnibuses and motor coaches would have to comply, but I doubt whether it would be considered reasonable to make the carrying of first-aid outfits by all public service vehicles compulsory.

Claims for Dental Benefit.

Mr. RHYS DAVIES asked the Minister of Health if he had any information to show whether claims to dental benefit by insured members on any approved societies had now reached the anticipated maximum or whether such claims still continued on the increase.—Mr. CHAMBERLAIN replied: General statistics are not available to show the rate at which claims to dental benefit are now being received by approved societies, but I am informed that some, at any rate, of the larger societies have found the claims during the present year to be fairly steady in number, or even to show some tendency to decline.

MONDAY, JUNE 25TH.

Welsh Board of Health.

Sir CLEMENT KINLOCH-COOKE asked the Minister of Health his reasons for abolishing the post of Chairman of the Welsh Board of Health.—Sir KINGSLEY WOOD, Parliamentary Secretary to the Ministry of Health, replied: On the retirement of Sir Thomas Hughes from the Chairmanship of the Welsh Board of Health the position was reviewed, as is the case from time to time with all sections of my Department, in order to make sure that a proper relation existed between the personnel engaged and the work falling upon the Board. This review showed that the bulk of the Board's work is done, and done satisfactorily, by the members in their individual capacity, and meetings of the Board for collective deliveration are only rarely held. In these circumstances my right hon. friend felt that the employment of four higher officials on the Board was no longer justified and that the work could quite well be done in future by three. I may add that the Ministry of Health Act, 1919, empowers my right hon. friend to appoint such officers as he thinks fit to constitute a Board of Health in Wales, and it neither specifies any number nor lays down that there shall be any chairman.

TUESDAY, JUNE 26TH.

Fresh Water on Merchant Ships.

Lieut. Commander KENWORTHY asked the President of the Board of Trade what were the regulations in force regarding the taking on board of fresh water for cookng and drinking in merchant ships; if he was aware that it was the practice of certain ships' captains to fill up the fresh water tanks with river water which was not pure; and whether he would take steps to ensure the taking of an adequate supply of fresh and pure water in British and foreign ports respectively.—Sir P. CUNLIFFE-LISTER replied: I am sending the hon. and gallant Member copies of the provisions relating to the supply of water on merchant ships, and he will see that in home ports the water is subject to inspection by officers of the Board of Trade, and that at any port the water has to be examined if a complaint is made by three or more members of the crew, and any defects have to be put right. I am aware that river water is sometimes taken. It is the duty of a master to take good water whenever it is available, and if particulars are given of any case in which this is not done, the matter will be inquired into.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At recent examinations the following candidates were approved:—

THIRD EXAMINATION FOR M.B., B.CHIR.

Part I.: Surgery, Midwifery, and Gynæcology.—M. E. Albury, N. R. Barrett, H. F. Bateman, W. A. G. Bell, F. Bush, S. S. Chesser, E. Clayton-Jones, G. C. Dewes, A. J. Dix-Perkin, W. J. G. Drake-Lee, J. StC. Elkington, W. A. Elliston, P. H. Fox, E. L. Graff, C. J. Grosch, R. Hodkinson, S. H. G. Humfrey, S. D. Isaacs, W. P. Jones, L. W. A. Lankester, P. G. Levick, J. C. F. Lloyd-Williamson, A. Maberly, A. A. Miles, J. K. Monro, J. R. Peacock, L. S. Penrose, J. B. A. Reynolds, A. M. Rhydderch, A. M. Roberts, W. H. Scott-Easton, C. W. Shaw, H. J. Simmons, W. H. Simonds, E. T. O. Slater, T. R. Stevens, H. H. Stewart, H. S. Taylor Young, J. F. Varley, J. Vaughan Bradley, H. S. Waters, L. B. Winter, F. W. J. Wood; M. H. D. Carr, M. Leathes, J. R. Lees, and M. A. Wilcox.

Part II.: Physic, Pathology, and Pharmacology.—M. C. Andrews, W. R. Ashby, N. R. Barrett, D. H. Belfrage, W. Buckley, S. S. Chesser, H. T. Cox, W. J. G. Drake-Lee, J. StC. Elkington, E. G. Frewer, T. O. Garland, R. M. Gilchrist, F. H. Gillett, J. C. Gordon, R. A. P. Gray, L. J. Haydon, J. H. Hopper, M. C. Hounsfield, L. R. Janes, T. E. Lamech, J. M. Lees, E. W. Lindeck, W. J. Lloyd, R. A. McCance, D. J. MacMyn, W. E. Mashiter, A. A. Miles, T. St. M. Norris, M. D. Nosworthy, R. E. M. Pilcher, J. C. C. Poole, E. J. Pye-Smith, E. G. Recordon, A. M. Rhydderch, F. A. Richards, A. M. Roberts, R. W. N. Robins, R. P. Ross, H. Scudamore, L. Shillito, F. Smith, T. R. Smith, W. Smith, E. T. C. Spooner, T. C. Stevenson, G. R. S. Stewart, H. H. Stewart, G. S. Storrs, J. R. H. Towers, H. S. Waters; A. G. Clogg, C. P. Giles, E. M. Hoskin, and M. P. Shackle.

SOCIETY OF APOTHECARIES OF LONDON.—At a recent examination the following candidates passed in the undermentioned subjects:—

Surgery.—K. J. M. Graham, Charing Cross Hosp.; T. A. P. Proctor, Birmingham; A. F. Quarmby, Birmingham; S. M. Rahman, Calcutta and Middlesex Hosp.; and W. Ziv, Bâle and London Hosp.

Medicine.—P. C. Basu, Calcutta; H. C. Clifford-Smith, Charing Cross Hosp.; S. M. Rahman, Calcutta and Middlesex Hosp.

Forensic Medicine.—M. K. Bryce, London Hosp.; and A. F. Quarmby, Birmingham.

Midwifery.—H. H. Jackson, Manchester and Charing Cross Hosp.; C. P. Madden, St. Bartholomew's Hosp.; and H. Murkus, Birmingham.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery: K. J. M. Graham and William Ziv.

UNIVERSITY OF DURHAM.—At recent examinations the following candidates were successful:—

THIRD EXAMINATION FOR M.B., B.S.

Pathology, Bacteriology, &c.—Wilfred Hall.

THIRD EXAMINATION FOR B.D.S.

Pathology, Bacteriology, &c.—John Chalmers.

KARLSBAD POST-GRADUATE COURSE.—The annual post-graduate course with special reference to balneology will be held from Sept. 23rd to 29th. Twenty-seven lectures will be given by well-known authorities from all countries on many aspects of medicine. Among the British lecturers will be Prof. Hugh MacLean, who will speak on the treatment of gastric and duodenal ulcers with alkalis in large doses, and Dr. George Graham, who will discuss the cause of the lowered tolerance for sugar among diabetics. Special concessions are being given by the railway companies to those taking the course. Further particulars may be obtained from Dr. Edgar Ganz, of Karlsbad.

LIVINGSTONE COLLEGE.—Dr. G. C. Low presided at the commemoration day celebrations at Livingstone College, Leyton, on June 15th. After a brief résumé of the advances in tropical medicine during the last 40 years, he drew attention to the importance of special training in this branch of medicine to all who go abroad. Such training the College provided for missionaries and others and every year its old students testified how the teaching obtained there had enabled them to save life, had tided them over difficulties, and had helped them to preserve their own health and keep fit when others were ill and dying. Students of the College were treating yaws, sleeping sickness, and leprosy under the direction of Government Medical Service in Africa and other lands. It was astonishing, said Dr. Low, how knowledge of a simple fact might influence the progress of a disease and how nursing might make all the difference between life and death. The Principal reported that 1020 students had passed through the College and begged missionary societies to send their candidates for training. The sum of £400 is needed to close the financial year without a deficit on the year's working.

UNIVERSITY OF SHEFFIELD.—At a congregation to be held on July 11th in connexion with the centenary of the foundation of the medical school in Sheffield, the honorary degree of D.Sc. will be conferred upon Dr. H. H. Dale, F.R.S., Prof. A. J. Hall, Sir Frederick Hopkins, F.R.S., Sir Thomas Lewis, F.R.S., and Prof. Otto Warburg.

UNIVERSITY OF GLASGOW.—At a graduation ceremony held on June 20th the honorary degree of Doctor of Laws was conferred on Prof. George W. Crile, of Cleveland, Ohio, past-President of the American College of Surgeons. The degree of M.D. was conferred on Frederick Robertson Martin for a thesis entitled A Study of Kretschner's Types in the Psychoses.

UNIVERSITY OF OXFORD.—The Radcliffe Prize, of the value of £50, is awarded by the Master and Fellows of University College every second year for research in either human anatomy, physiology, pharmacology, pathology, medicine, surgery, obstetrics, gynæcology, forensic medicine, or hygiene. It is open to all graduates of the University who have proceeded, or are proceeding, to a medical degree in the University. Candidates must not have exceeded twelve years from the date of passing the last examination for the Degree of Bachelor of Arts. Memoirs should be sent to the Secretary of Faculties, at the University Registry, on or before Dec. 1st, 1928; the award will be made in March, 1929. No memoir for which any University prize has already been awarded is admitted to competition for the prize.

UNIVERSITY OF LONDON.—At a meeting of the Senate on June 20th, Sir Gregory Foster, Provost of University College, was elected Vice-Chancellor for 1928–29 in succession to Sir William Beveridge. A unanimous and cordial vote of thanks was passed to Sir William Beveridge for the conspicuous services which he had rendered to the University during his tenure of office. The degree of D.Sc. in Anatomy was awarded to Miss Ida C. Mann, F.R.C.S., for a thesis on the Development of the Human Eye, and the degree of D.Sc. in Physiology to Mr. C. H. Best, of the National Institute for Medical Research, for a thesis on the Effect of Insulin on the Dextrose Consumption of Perfused Skeletal Muscle.

University College.—Dr. R. J. Brocklehurst has been appointed lecturer in the department of physiology and biochemistry, and Dr. Marion G. Eggleton assistant in physiology and biochemistry.

GRANT MEDICAL COLLEGE, BOMBAY.—The annual report shows that several new schemes have taken shape at the college during the year. The building for the new pathology and bacteriology departments, which are to be amalgamated, has been begun, and will contain the pathological museum, and bacteriological and clinical laboratories, the instalment of an up-to-date refrigerator also forming part of the scheme. The Memorial Tablet of the Sir Currimbhoy Memorial Dental College and Hospital was unveiled in February, and this institution will provide instruction in dental surgery and dental relief. During 1927–28 there were 418 regular students at the college.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—The eighty-seventh annual meeting of this Association will be held from July 11th–13th, under the presidency of Prof. J. Shaw Bolton, at the West Riding Mental Hospital, Wakefield. A business meeting will be held at 10.30 A.M. on the 11th, and at 2.30 P.M., Prof. Shaw Bolton will give his presidential address, entitled the Evolution of a Mental Hospital—Wakefield, 1818–1928. The two other days will be devoted to the reading of papers and demonstrations. A detailed programme may be had from the general secretary, Mr. R. Worth, Springfield Mental Hospital, near Tooting, London, S.W. 17.

MEDICAL GOLFING SOCIETY.—The summer meeting was held on June 19th at Walton Heath when competitors were the guests of Lord Riddell. The results were as follows: THE LANCET Challenge Cup: T. A. Torrance, 3 up. Henry Morris Challenge Cup: T. A. Torrance, H. T. P. Kolesar, H. Chapple, C. Apperly, and Murray Thomson (tied at 1 up). Milsom Rees Challenge Cup: Murray Thomson, 5 down. Class I.:—First Prize and Second Prize: T. A. Torrance and H. T. P. Kolesar (tied at 1 up). Best Last Nine Holes: H. T. P. Kolesar, W. Jagger, and H. D. Gillies (tied at 2 up). Class II.:—First Prize and Second Prize: H. Chapple, C. Apperly, and Murray Thomson (tied at 1 up). Best Last Nine Holes: H. L. Hatch, A. C. Palmer, and Haldin Davis (tied at 2 up). Foursomes:—First Prize: T. A. Torrance and Sir K. Goadby (won at 2 up); Second Prize: W. Jagger and H. G. Hill, W. R. Bristow and H. T. P. Kolesar (tied all square).

EPSOM COLLEGE: A SUBSTANTIAL BEQUEST.—After making generous provision for his domestic staff and gifts to friends, Inspector-General Henry Hadlow, R.N., left practically the whole of his estate to various medical charities, including £10,000 stock to Epsom College for the creation of a pension fund for medical men and their widows. He also gave £8500 to the Royal Portsmouth Hospital and £100 to the Portsmouth Eye and Ear Hospital.

THE King has sanctioned the following promotions to the Venerable Order of the Hospital of St. John of Jerusalem:—As Commanders: Col. Harry Thornton Challis and Mr. John Willett. As Officers: Lieut.-Col. William Blackwood and Maj. William Owen Evans.

LONGEVITY OF INCURABLES.—At the festival dinner of the Royal Hospital and Home for Incurables at Putney it was stated that, despite their infirmities, some of the inmates had been in the home 20, 30, and even 50 years.

SURREY COUNTY SANATORIUM, MILFORD. — The Minister of Health, Mr. Neville Chamberlain, will formally open this sanatorium on Friday, July 20th, at 3.30 P.M. The building has been designed to accommodate 300 patients and the necessary staff, and cost about £200,000.

MIDDLESEX HOSPITAL REBUILDING.—On June 26th the Duke of York, accompanied by the Duchess, laid the foundation-stone of the west wing of the new Middlesex Hospital building. Prince Arthur of Connaught, chairman of the hospital, announced that £405,500 has so far been contributed towards the cost of reconstruction, which is estimated at £1,001,670. The sum of £200,000 has been given anonymously for the building of the new nurses' home.

NATIONAL HEALTH INSURANCE.—Arrangements are being made under which arrears of Health Insurance contributions will be excused for any week, after July 1st, 1928, during the whole of which the insured person proves that he was available for but unable to obtain employment. Arrears are also to be excused for periods of incapacity for work through sickness, whether benefit is claimed or not, provided that notice of the sickness is sent promptly to the approved society. Instructions as to the procedure to be adopted in order that this concession may be obtained will be given at any local office of the Ministry of Labour.

ADDRESS TO THE GOVERNOR-GENERAL OF THE IRISH FREE STATE.—The Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland have each presented an address of welcome to Mr. James McNeill, Governor-General of the Irish Free State. In its address the College of Surgeons expressed its satisfaction with the settlement of the registration question, and its assurance of hearty coöperation with the Government in all matters affecting the public health. In his reply the Governor-General thanked the College for its welcome, and added that its "readiness to coöperate in matters affecting the public health and the public welfare would be recognised by all who appreciated the standards of duty which the medical profession was at pains to inspire in, and exact from, its members."

A CENTRAL MEDICO-LEGAL INSTITUTE.—In a leading article on Status Lymphaticus in THE LANCET of May 26th (p. 1078) we noted that "the recent Coroner's Act seems to have had the unfortunate effect of diminishing the number of examples of sudden and violent death which are subjected to expert examination, and emphasis is laid once more on the grave defect in having no central institute in London where all the medico-legal work should be concentrated in the hands of experienced pathologists, who might have some chance of getting to the bottom of this and similar problems." At a meeting of the London County Council on June 19th Lieut.-Colonel J. B. Dodge asked the Chairman of the Public Health Committee: (1) Whether he had had his attention called to a leading article in the press in which emphasis was laid on the grave effect of having no central institute in London where all the medico-legal work should be concentrated? (2) Whether his attention had been drawn to discussions upon this matter at the Medico-Legal Society? (3) In view of this, whether he would ask his official advisers to prepare a memorandum on the subject for the information of the members of the Council?—Dr. Barrie Lambert, the Chairman of the Public Health Committee, replied that he would instruct the officers to report to the Public Health Committee on the present position and would bring up a report to the Council if considered necessary.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, July 3rd.—4 P.M., ANNUAL GENERAL MEETING.

HARVEIAN SOCIETY OF LONDON.
THURSDAY, July 5th.—4.30 P.M. Meeting at Guy's Hospital, St. Thomas's-street, S.E.: Demonstrations in the museum and the cardiological, bacteriological, and radiological departments.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, July 2nd, to SATURDAY, July 7th.—BROCKLEY HILL COUNTRY ORTHOPÆDIC HOSPITAL. Demonstration by Mr. G. Perkins at 11.30 A.M. on Tues., if ten post-graduates notify their intention to be present (Telephone: Mayfair 2236).—ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, Broad-street, W.C. Demonstration by Mr. M. L. Hine at 3 P.M. on Thurs.—CHARING CROSS HOSPITAL. Demonstration by Dr. F. G. Chandler at 2 P.M. on Fri. The above are free.—WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street. Special course of lectures and clinical demonstrations upon selected cases at 5 P.M. daily.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham.
MONDAY, July 2nd.—2.30 to 5 P.M. Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M., Medical, Surgical, Throat, Nose and Ear Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinics. 2.30 to 5 P.M. Medical, Surgical, and Ear, Nose and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose and Ear Clinics. 2.30 to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham.
WEDNESDAY, July 4th.—4 P.M., Mr. E. Pearce Gould: The Management of Inoperable Malignant Disease.

Appointments.

BOWES, GERALD K., M.D. Oxf., D.P.H., has been appointed Medical Officer of Health, Bedford.

DEARNLEY, GERTRUDE, M.D., B.S. Lond., Gynæcologist, Hornsey Central Hospital.

MCDONALD, NIEL, M.B., Ch.B. Manch., L.R.C.P. Lond., M.R.C.S., Anæsthetist to St. Peter's Hospital for Stone, Covent Garden, W.C.

ROSS-KEYT, F. D., M.B., Ch.B. Aberd., D.P.H., Medical Officer of Health for Stoke Newington.

TOOTH, R. S., L.R.C.P. Lond., M.R.C.S., Certifying Surgeon under the Factory and Workshop Acts for Lewes.

Vacancies.

For further information refer to the advertisement columns.

Ashton-under-Lyne, District Infirmary.—3rd H.S. At rate of £150.
Association of Surgeons of Gt. Britain and Ireland, 17, Wimpole-street, W.—Surgical Scholarship. £350.
Bombay, Cama and Albless Hospitals.—M.O. Rs.800–50–1000.
Bradford City.—Asst. S.M.O. £600.
Brighton, Royal Sussex County Hospital.—H.S. £150.
Bromley, West Kent Joint Hospital Board, Infectious Hospitals.—Res. M.O. £400.
Burton-on-Trent, General Infirmary.—Sen. Res. H.S. £200.
Cardiff Royal Infirmary.—Hon. S. to Ear, Nose and Throat Dept.
Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.—Jun. H.S. £50. Also Pathologist. £75.
Colchester, Essex County Hospital.—Asst. H.S. and Reg. £120.
Dumfries, Crichton Royal Mental Hospital.—Clinical Pathologist. £400.
Eastcote, Middlesex, St. Vincent's Orthopædic Hospital.—Res. M.O. At rate of £150.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Gravesend, Gravesend & North Kent Hospital.—Jun. H.S. At rate of £100.
Hackney and Stoke Newington Tuberculosis Dispensary, Kingsland-road, E.—Clin. Tuberculosis Officer. £750.
Hackney Hospital, High-street, Homerton, E.—Jun. Asst. M.O.'s Each £350.
Hartlepool, Hartlepool Hospital.—H.S. £150–£200.
Hove, Lady Chichester Hospital.—H.P. At rate of £100. Also Jun. H.P. £50.
Hull, City and County of Kingston-upon-Hull, &c.—Asst. M.O.H. £600.
Kensington Tuberculosis Dispensary, 119, Ladbroke-grove, W.—Temporary Tuberculosis Officer. 35 gns. a month.
Leeds Public Dispensary.—Sen. Res. M.O. £200. Also Hon. P.
London Jewish Hospital, Stepney Green, E.—Hon. Radiologist.
London School of Hygiene & Tropical Medicine, 25, Gordon-street, W.C.—Research Studentship in Helminthology. £250.
Manchester, St. Mary's Hospitals.—4 H.S.'s. Each at rate of £50.
Manchester, Salford Royal Hospital.—H.P. At rate of £125.
Manchester University.—Reader in Materia Medica and Therapeutics. £800.
National Hospital, Queen-square, W.C.—Hon. Surg. Asst.
Newark Hospital and Dispensary.—Res. H.S. At rate of £150.
Northampton Mental Hospital, Berrywood.—Locum tenens M.O. 7 guineas weekly.
Nottingham, City Mental Hospital.—Jun. Asst. M.O. £350.
Plumstead and District Hospital, Plumstead High-street, S.E.—Second Asst. M.O. £350.
Plymouth, South Devon and East Cornwall Hospital.—Res. Surg. Officer. At rate of £100.
Preston, Biddulph Grange Orthopædic Hospital.—Jun. H.S. £150.
Reading, Royal Berkshire Hospital.—H.P. Third H.S. Also First H.S. Each £150.
Richmond, Surrey Royal Hospital.—Jun. H.S. £100.
Royal Army Medical Corps.—Commissions.
Royal Free Hospital, Gray's Inn-road, W.C.—Jun. Clin. Assts.
Royal London Ophthalmic Hospital, City-road, E.C.—Gifford Edmonds Prize in Ophthalmology. £100.
St. Mark's Hospital, &c., City-road, E.C.—Res. Surg. Officer. At rate of £150.
St. Mary's Hospital, W.—Dental Surgeon.
Sheffield, Jessop Hospital for Women.—Three Asst. H.S.'s. Each at rate of £100. Also Sen. Res. O. £250.
Surrey County Council.—Deputy County M.O.H. Also Asst. M.O. £1000 and £600 respectively.
Taunton, Taunton & Somerset Hospital.—Jun. House M.O. At rate of £100.
Victoria Hospital for Children, Tite-street, Chelsea, S.W.—H.P. and H.S. Both at rate of £100.
West Bromwich, Hallam Hospital.—Res. H.P. £250.
West London Hospital, Hammersmith-road, W.—Res. Asst. Surg. £200.
Wrexham and East Denbighshire War Memorial Hospital.—Two Res. H.S.'s. Each at rate of £100.
York, The Retreat.—Temporary Asst. Phys. 6 guineas weekly.

The Secretary of State for the Home Department gives notice of vacancies for Medical Referees under the Workmen's Compensation Act for the Inverness (Mainland) District (Sheriffdom of Inverness, Elgin, and Nairn), and for the Wick District (Sheriffdom of Caithness, Orkney, and Shetland). Applications should reach the Private Secretary, Scottish Office, Whitehall, London, S.W., not later than July 18th.

Births, Marriages, and Deaths.

BIRTHS.

MITCHESON.—On June 18th, the wife of George F. L. Mitcheson, B.A., M.B., B.Ch. Oxf., of Hathersage, Benfield Way, Portslade, of a daughter.

MARRIAGES.

ARMSTRONG—HOUGH.—On June 21st, at St. Margaret's Church, Streatham Hill, Dr. J. S. Armstrong to Agatha Mary, daughter of the Bishop of Woolwich and Mrs. Hough.

BEVERIDGE—MACNAMARA.—On June 12th, at the Church of the Sacred Heart, Donnybrook, Dublin, Major Arthur Beveridge, M.C., R.A.M.C., to Sheila, only daughter of Lieut.-Colonel W. J. and Mrs. Macnamara, Herbert Park, Dublin.

MILNER—MARDALL.—On June 23rd, at the Parish Church, Harpenden, Dr. J. G. Milner to Monica Thrale Mardall.

MONCRIEFF—WEDMORE.—On June 20th, at All Saints', Clevedon, Somerset, Alan Moncrieff, M.D., M.R.C.P., to Honor, only child of Mr. and Mrs. Cecil Wedmore.

DEATHS.

DREW.—On June 23rd, at Donnington-square, Newbury, Robert S. Drew, M.B., L.R.C.P., aged 50.

HANDFORD.—On June 24th, at Elmfield, Southwell, Henry Handford, M.D., F.R.C.P., aged 73.

KEATINGE.—On June 21st at his residence in Jersey, Dr. H. Pottinger Keatinge, C.M.G., late Director, Egyptian Government Medical School and Kasr-el-Ainy Hospital, Cairo, aged 67.

WILLIAMS.—At Villerville, on June 18th, Richard Tudor Williams, M.B., B.S. Lond., of Llanfairfechan and of Plas-y-Ward, Ruthin.

N.B.— A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE WORK AND RESPONSIBILITIES OF THE PATHOLOGIST.[1]

By Sir Bernard Spilsbury,
HON. PATHOLOGIST TO THE HOME OFFICE.

THE pathologist is a specialist in the study of the scientific aspects of disease, considering them from the point of view of the essential causes of disease, of the changes, visible and microscopical, which they produce in the body, and of the reactions which they provoke in the patient. Employing laboratory methods, and with the aid of instruments of precision such as the microscope, the pathologist applies his skill and knowledge to the diagnosis and the treatment of disease. The growth of scientific knowledge during the last 50 years, and the elaboration of laboratory methods of investigation, have greatly increased his labours, and they are bringing about a division of the work between the pathologist, using the term in the narrower sense, the bacteriologist, and the chemist. In this address I employ the term "pathologist" to include these three groups of workers.

The Romance of Anthrax.

I propose to give a few illustrations of the achievements of pathology in the study of the causes and processes of disease, and to indicate some of the applications of this knowledge. I will take first what I like to call the romance of anthrax. Anthrax is a very fatal disease, to which sheep, cattle, and horses are specially susceptible, men being infected directly from these animals or from their hides and wool; in this country, where the disease is a rare one, it is from imported hides and wool that the danger arises in almost all cases. The disease has been recognised from very early times; the murrain of cattle recorded in Exodus is supposed to have been anthrax. In the Middle Ages widespread epidemics were recorded in Europe and Asia, in which cattle and sheep were decimated, and anthrax has been one of the factors in the production of famines. About the year 1850, tiny bodies were observed under the microscope in the blood of animals suffering from the disease, and it was claimed that blood containing these bodies produced the disease when it was introduced into a healthy animal. The matter was still under dispute when, in 1876, Koch, at that time a country practitioner in Germany, devised methods of growing the organism outside the body in tubes of culture media; he showed that these cultures had distinctive characters, and he reproduced the disease in healthy animals by injections of the cultures, obtaining the same organisms again from the experimental animals when they succumbed to the infection. Koch's discoveries of the organisms of tuberculosis and of cholera came later, and the application of his methods by other workers has resulted in very notable discoveries of the causative agents in disease, but it was his discovery of the cause of anthrax which was utilised by Pasteur—who had already begun his investigations on infectious diseases—to develop a method of protecting animals against disease. Starting from the known fact that an animal which had recovered from an attack of anthrax was protected against the infection, he experimented with cultures of the anthrax bacillus until he succeeded in so reducing the virulence or potentiality to reproduce the disease, that after injection of the attenuated cultures into healthy animals these developed protective powers which enabled them to resist the subsequent injection of virulent cultures of the organism. The method of protective inoculation has been widely employed in countries where the disease is prevalent, with the result that the mortality in cattle and sheep has been greatly reduced. In France, for example, where millions of inoculations are made in the course of the year, the death-rate in animals has been reduced to about one-twentieth of what it was before inoculation methods were employed.

Rabies.

The success of this method led Pasteur to attack hydrophobia, of which the mortality in dog and man was very high. He did a considerable amount of experimental work on animals, and he showed that rabbits could be infected from rabid dogs and from patients who had died from the disease. He found that the virus or active principle of the disease was always present in the spinal cord of the rabbits used in experiments, and that healthy dogs could readily be infected by injections made from this material. On keeping the spinal cords of the rabbits under carefully controlled conditions he found that the virus rapidly lost its strength, until at length it failed to reproduce the disease in dogs. Taking advantage of the fact that persons bitten by rabid dogs usually did not develop the disease for some weeks, he injected into patients preparations from the spinal cord of the experimental rabbits, using first a very attenuated virus, and repeating the injections with viruses of increasing virulence. By that means he succeeded in protecting the patient before the natural disease had time to develop. The result of this treatment, carried out in the Pasteur Institutes in different parts of the world, has been to reduce the fatalities to less than 1 per cent. of those treated.

I have described the investigation of anthrax and hydrophobia, because they are pioneer examples of the pathological methods used in the discovery of the cause and the treatment of infectious disease. In some infections the protective powers conferred upon the patient or the animal are present in the blood, and advantage is taken of this fact to treat patients who are suffering from one of them by injections of serum from an animal which has been protected or immunised against that particular infection. The animal used for this purpose receives a number of injections, containing the organism or its specific poison, in carefully graduated doses. After each injection substances are developed in its body and blood, which counteract the effects of the poison which has been injected; after a number of injections the protection conferred upon the animal is a very high one. A part of its blood is then withdrawn from the animal, and from it is separated the serum which is used for injection into the patient, where it acts as an immediate antidote to the poison produced by the disease. One of the most frequent applications of serum treatment is in diphtheria, and it has been clearly proved that the mortality from the disease is greatly reduced by the injection of the specific serum; the beneficial effects are very striking when the patient is treated at an early stage of the illness, but every day's delay in the use of the serum diminishes its efficacy.

Diphtheria.

The pathologist, as part of his routine work, is asked to diagnose infectious disease by the discovery of the organism. In many cases this is accomplished by microscopical examination, aided by the examination of cultures made from tissue or body fluids of the patient. In some cases these methods fail, and recourse may be had to animal experiments to enable the diagnosis of the disease to be obtained. A disease in which such investigation is often required is tuberculosis, for in obscure and early cases the search for the organism by microscopical methods may be hopeless. An injection of the suspected material is made into a guinea-pig, and after allowing sufficient time for the disease to develop, the animal is killed. The changes produced by the tubercle bacillus are characteristic, and the presence of these changes in the dead body of the animal enable a diagnosis to be made in many cases where other methods have failed. Another difficulty with which the pathologist has to contend is that some of the bacteria which produce specific diseases have their doubles—i.e., organisms which are exactly like them in appearance and it may be also in the growth of cultures made from them, but which are themselves harmless, and sometimes the two organisms can only be distinguished by means of animal experiments. I recall in that connexion the case of a schoolboy who developed diphtheria, and from whom I obtained the organism of the disease. The boy made a good recovery, and as a precaution he was examined again to be certain that no diphtheria organisms were still present in his throat which might render him a danger to others. I found the organism in small numbers; the treatment was continued and the boy kept in isolation. Repeated bacteriological examination, extending over more than two months, always showed the presence of a few organisms. At last it was decided to inject the organisms into a guinea-pig. This was done, and the animal suffered no ill-effects, as it would have done if the organism had been an active diphtheria bacillus; it was thus proved that the boy had got rid of the diphtheritic infection, and was harbouring its harmless double.

There is much misunderstanding of the nature and effects of inoculation experiments upon animals. In the vast majority of cases the animal suffers no worse effect, at the time of introduction of the material, than the prick of a hypodermic needle. In some cases the development of the disease quickly ends in death; in others, as for example tuberculosis, the animal presently shows signs of the disease sufficient to indicate that it should be destroyed and its dead body examined. Such an animal suffers far less than the patient in whom the disease would terminate fatally. It is only in a very small proportion of cases that serious suffering, in the sense of pain, attends inoculation experiments, and in these cases it is usually short-lived owing to the rapid progress of the disease.

[1] The Stephen Paget Memorial Lecture delivered on June 19th to a meeting of the Research Defence Society.

Chemical Problems.

Many chemical problems are presented to the pathologist. Shortly after the outbreak of war I was asked by a London coroner to make a post-mortem examination of a man who had died from jaundice. The man had been working at one of the newly established aeroplane works at Hendon, in a building in which the wings of the aeroplane were constructed and varnished, and he was exposed to the heavy fumes of the varnish or "dope" given off from the wings after the varnish had been applied. Other workers in the building had suffered, but less severely, and it was suspected by the workers that the fumes of the dope were responsible for their ill-health. My examination of this man showed that his death was due to severe disease of the liver, similar in some respects to a rare form of severe jaundice, but differing in certain particulars; the presence of this disease, and the fact that other workers were suffering in a similar manner, strengthened the suspicion that some form of poison was responsible for the illness. My colleague, Sir William Willcox, who had examined the man during his illness, was called in, and was furnished with samples of the dope and of its separate ingredients, which included methylated spirit, acetone, benzine, and tetrachlorethane. These substances were all present in the vapour given off by the varnish as it dried, and it was a matter of considerable importance to determine which, if any, of these substances acted as a poison. This could only be done by experiments on animals, and a number of rats were exposed to the action of the fumes for some hours daily for about a week. One rat was subjected to the vapour given off by the varnish itself, and others to that of the four volatile ingredients separately. It was proved during the experiments that the animals exposed to the varnish and to tetrachlorethane suffered in health, being drowsy, taking less food, and not increasing in weight like the other animals. At the end of a week the animals were killed, and their organs were examined microscopically, and it was found that the effect of tetrachlorethane had been to produce severe damage to the liver, dope itself producing less severe damage, whilst the other three ingredients of the dope produced no ill-effects. By this means information was obtained as to the cause of the illness, which could not have been gained in any other way. The result of the investigations was that improved ventilation systems suitable to this form of vapour were introduced into the factories, since the work was urgent and could not be stopped; the workers were subjected to regular medical inspection; later it was found possible to substitute a non-poisonous medium for the poison tetrachlorethane. In all, some 70 persons suffered severely, and 12 died, most of the illnesses having been contracted before the cause had been ascertained; by this means poisoning by tetrachlorethane eventually ceased, no case occurring during the later years of the war.

Another poison on which investigation was required during the war was trinitrotoluene, more familiarly known as T.N.T. Here the problem was a different one, because the substance is a pure chemical and is a solid and not a vapour; the question in cases of illness was as to the portal by which the poison entered the system. Here, again, experimental work served a very useful purpose in indicating the measures to be employed to reduce the risk of handling the substance. Another chemical poison is carbon monoxide, the poisonous constituent of coal-gas and a product of incomplete combustion. In this case the experiments on mice, carried out by Prof. J. S. Haldane, established the mechanism by which the poisonous action was produced, and demonstrated the proper method of treating those who were suffering from its effects.

Conclusion.

In this inadequate survey of the work of the pathologist I have continually directed attention to the use of experiments upon animals, both in the study of the origins of disease and as an aid in diagnosis and treatment. A large part of our knowledge of bacteriology is based upon experimental work; this is inevitable in the present state of our knowledge, for an important means of testing suspected organisms is by the reproduction of the disease in living animals. It is also required for the diagnosis of infectious disease in the patient, and pathologists are finding themselves compelled to have a Home Office licence for vivisection, in order to perform the necessary tests on living animals. For this reason, in recent years, the number of licences granted to pathologists all over the country has greatly increased. With regard to the responsibilities of the pathologist, he is a medical practitioner, who, like his clinical colleague, has to apply his skill and knowledge to the best advantage for his patients. He must avoid error as far as possible, employing exact methods, which must include, at present, animal experiments. The scientific advances of the last 50 years in relationship to medicine have been largely based on experimental work, and have gone far to revolutionise the treatment of some diseases; as a result there are infections, which at one time were widespread, with which the modern practitioner is scarcely acquainted. If our forbears of a century ago could see the work which has been done in modern science and medicine, they would exclaim: "Had we but had your knowledge, what an enormous amount of suffering would have been prevented."

THE TELEPHONE SERVICE AND THE VILLAGE NURSE.

THE question was recently brought up in the House of Commons as to whether, in the interests of her patients, the installation of a telephone in the home of the village nurse is so desirable that special concessions ought to be offered in order to induce her to procure one. Mrs. Runciman and Commander Bellairs suggested that she should be allowed to rent the telephone at the quarterly rate payable by the private subscriber (£1 7*s.* 6*d.*) instead of that (£1 15*s.*) payable by one who uses the instrument substantially for professional purposes. Lord Sandon went even further in asking the Postmaster-General whether he would take steps to see that all district nurses in rural areas should have a telephone installation. The reply was not encouraging. Lord Wolmer, Assistant Postmaster-General, pointed out that difficulties might arise if the Post Office attempted to discriminate between groups of professional people and offered the same service to any one class of subscribers at a lower rate than that charged to others. If nurses were granted such a privilege doctors and chemists might feel aggrieved. In our view there is some justification for differentiation in favour of the doctor, the chemist, and the nurse, as against other professions, since it is in the public interest that their services should be available at short notice. It seems unlikely, however, that the Post Office will consent to their exemption from the extra payment demanded from professional subscribers. As far as the village nurse is concerned, it seems to us doubtful whether the routine installation of a telephone, under the present conditions of the service in villages, would be of great value, even if she lives with other people who are willing to take down messages. As a rule she lives in a cottage which is empty when she is at work, that is for most of the day, and between 8 P.M. and 8 A.M., when she is likely to be at home, the telephone service in many villages is not open. Those interested in rural medical and nursing needs of villages might with more advantage press the Post Office to arrange for a night service throughout the kingdom. This seems to us a really important step towards ensuring prompt attention for the sick, and when it has been achieved the village nursing associations will probably find it expedient to install and maintain a telephone in the nurse's home out of general funds at their disposal.

A SAFETY BATHING COSTUME.

WE have received from the Institute of Patentees, Roxburghe House, 273–287, Regent-street, London, specimens of the "Swimeezi" bathing costumes, which have been designed by Dr. M. W. Browdy as an effort to overcome the numerous calamities which occur each year through beach bathing. These costumes look outwardly like ordinary costumes, but the portions covering the chest and the back are constructed as rubber air-chambers, designed to be maintained in a definite anatomical position when inflated. The greater area of buoyancy given to the front of the garment is intended to cause the bather to roll on his back should he be in difficulty. The rubber air-chambers can be inflated or deflated easily by a neat valve construction, and swimming experts who have tested the invention speak highly of it.

VITAL CAPACITY OF NEGROES.

Dr. W. G. Smillie and Dr. D. L. Augustine have been investigating hookworm in a group of about 2000 white and negro school-children in South Alabama.[1] As a by-product of this study they have measured the vital capacity of about 1000 persons, and have found that the results for the white people corresponded closely to the standard tables of Myers. The negroes, however, showed in all the groups studied a consistently and markedly lower vital capacity than the whites. The discrepancy was partly explained by measurements of the sitting height, for the negroes tend to have a shorter trunk length than the whites. Even after correction for this, however, the vital capacity is more than 15 per cent. lower. Disease cannot have played any great part in producing this figure, for the men were picked for their strength and ability to do hard work. The investigators believe, therefore, that low vital capacity is a racial characteristic. It is tempting to correlate this with the black man's well-known susceptibility to respiratory diseases, but of course the assumption is at present without foundation.

[1] Amer. Jour. Dis. Child., 1926, xxxi., 151.

Arthur, Rev. John William, appointed to Executive Council of Kenya, 616
Artificial silk factories, health conditions in (P.I.), 631
Artificial Sunlight and its Therapeutic Uses (F. Howard Humphris), 4th ed. (R.), 709; results, 785; treatment (P.I.), 1359
Arvedson, J., Technique of Swedish Medical Gymnastics (R.), 1127
Asbestos workers, health of (P.I.), 891
Ascites, treatment of, by novasurol and ammonium chloride (Sir John F. H. Broadbent), 1326
Ashby, Hugh T., and Smith, G. S., Chloroma: a study of three cases, 1169
Aspergillosis, splenomegaly associated with (A.), 767; (C.), 933
Asphyxia (L.A.), 1130
Asthma and affections of the skin (A.), 246; conditioned reflexes in (C.), 1096; observations on (C.), 672; syndrome, pathological mechanism of the, 288; X rays in the treatment of, 946
Asthma Research Council (A.), 561; (C.), 626, 672; appeal for support (C.), 573
"Astonished" infants (C.), 1250, 1364
Athletics, Heart and (Felix Deutsch and Emil Kauf) (R.), 556
Atkin, Lord Justice, on the medical practitioner in relation to the administration of justice, 184
Atkinson, E. Miles, Abscess of the brain (Hunterian lecture), 483, (C.), 625
Atrophy from disuse (A.), 143
Aural disease and military service (A.), 822; inflammations, sound-deadened rooms in the treatment of (C.), 1145; systemic infection (C.), 55, 105, 263
Auricle, left, aneurysmal dilatation of (A.), 299
Auricular fibrillation, spasmodic, and broncho-pneumonia, complicating sepsis in the puerperium (James A. Kerr), 128; treatment of, 657
Auricular flutter (Henry Moore), 795
Auscultatory gap, the (A.), 919; (C.), 987
Australian and New Zealand Medical Association in England, 1206
Austria, health statistics in, 153
Austrian spas, 1308
Autographs, medical (C.), 990
Aveling, F. A. P., Directing Mental Energy (R.), 1330
Avertin, a rectal anæsthetic, 978, 1088; in confinements, 1297
Aviation sickness (A.), 714
Avicenna, Rhazes and (C.), 1145

B

Bach, Francis, Case of congenital morbus cordis studied for 12 years, 1009
Bacillus acidophilus, emulsion, 322
Bacillus mucosus capsulatus, infection of meninges and blood stream by (W. Russell Brain and F. C. O. Valentine), 855
Backache (A.), 245
Bacteria, the names of (L.A.), 661
Bacteriological Equivalents, Dictionary of, in various languages (W. Partridge) (R.), 659
Bacteriology and Its Applications, Textbook of (Curtis M. Hilliard) (R.), 1180; General, Elementary Laboratory Guide in (Harold J. Conn) (R.), 1180; Practical, Blood Work and Animal Parasitology (E. R. Still), 8th ed. (R.), 31; Principles of (A. A. Eisenberg), 4th ed. (R.), 1286; Text-book of (W. W. Ford) (R.), 138
Bacteriophage from cases of rickets (T. Redman), 909
Bain, William, Notes on the treatment of hyperpiesis, 389
Balfour, Andrew, Education of medical officers for service in the tropics, 63, 117
Ballance, Sir Charles, Mastoid operations (C.), 417
Ballonius, the error of (L.A.), 974
Balmain, A. R., and Burton, A. H. G., Relapses in scarlet fever, 1060
Balme, Harold, The contribution of Christian thought to the science and practice of medicine, 531
Bamforth, J., and de Wesselow, O. L. V., Blood and plasma volumes in pernicious anæmia, 1056
Bankart, A. S. Blundell, Surgery of yesterday and to-morrow (C.), 1260
Barber's shop, hygiene in the (M.L.), 514
Barkas, Mary R., Cutaneous and visual hallucinations in the chronic hallucinatory psychosis (C.), 885
Barling, Seymour, Congenital hypertrophic stenosis of pylorus (C.), 573
Barnstaple, M.O.H.'s report, 1093
Barrington-Ward, L. E., The Abdominal Surgery of Children (R.), 555; on intestinal tuberculosis, 724
Barry, D. T., The Meinicke reaction (C.), 989
Bartlett, F. C., Psychology and the Soldier (R.), 815
Barton, James W., That Body of Yours (R.), 399
Barwell, Harold, Diseases of the Larynx, 3rd ed. (R.), 1076; An operation for the alleviation of deafness (C.), 109
Basophilia, punctate (L.A.), 818
Bassett-Smith, Sir Percy (O.), 56
Bathing costume, a safety, 1363
Batten, Lindsey W., The social factor in acute rheumatism (C.), 1144
Bauer, K. H., Frakturen und Luxationen (R.), 1285
Baxter, James Clement (O.), 265
Bayliss-Starling memorial, the proposed (A.), 718
Bayly, H. Wansey, Campaign against venereal diseases (C.), 883, 990
B.B.C. and medical practitioners (P.I.), 475
B.C.G., experiments with (A.), 92; in the laboratory (A.), 408; la vaccination préventive contre la tuberculose par le (A. Calmette and others), 84; vaccination, results of, 465; vaccine, 1142
Beatson, George Thos., Present position of the voluntary hospitals (C.), 414
Beaumont, G. E., and Dodds, E. C., Recent Advances in Medicine, 4th ed. (R.), 814
Bechterev, Vladimir, death of (A.), 40
Bedford, D. Evan, on pathology and electrocardiographic diagnosis of cardiac infarction, 189; and Parkinson, John, Cardiac infarction and coronary thrombosis, 4
Beet-sugar effluent and public health (P.I.), 374; river pollution and (M.L.), 308
Begging letters, 528
Behrend, Moses, Surgical Diseases of Gall-bladder, Liver and Pancreas (R.), 86
Belfast, maternity accommodation in, 206, 1149
Belgrade, British Hospital for Children, financial straits of, 72
Bellerby, C. W., Relation of the anterior lobe of the pituitary to the reproductive organs, 1168
Benacol in the treatment of pruritus ani, 378
Bennett, T. Izod, Gastro-duodenal ulceration (C.), 104, 210; Some problems of nephritis (Goulstonian lectures), 535, 637, 741
Bentley-with-Arksey, M.O.H.'s report, 1300
Benton, W., The future of medical practice (C.), 264
Benzyl cinnamic ester, use of, in tuberculosis (H. Gainsborough), 908
Beresford, G. W., on gastric ulcer, 83

BERLIN, CORRESPONDENCE FROM.—Aeroplanotherapy, 48—Army Medical Corps, German, recruitment of the, 731—Avertin in confinements, 1297—Cautery, revival of the, 516—Conferences, forthcoming, 1194—Diabetes in Germany, 257—Experiments on children, 983—Guttadiaphot, the, 1194—Heidelberg, new institute at, 49—Hormones, action of, 49—Infectious diseases in Berlin, 257—Lead poisoning, murder by, 48—Liners, medical staff on, 48—Malaria in Italy, campaign against, 731—Medical Chamber, election to, 49; deputies, payment of, 984; practices, sale of, 1297; students, social standing of, 1296; study, cost of, 1194—Municipal hospitals, Berlin, 1297—News items, 516, 984, 1297—Palate, soft, in diagnosis, 257—Pharmacists, responsibilities of, 984—Rheumatism, the campaign against, 516—Secrecy, professional, 1194—Sick club *v.* medical profession, 49—Statistics of the medical profession, 731—Syphilis, salvarsan in late, 516

Berlin, post-graduate study in, 162
Berman, S., A case of tetanus, 286
Bernard, Léon, and others, Cours d'Hygiène professé à l'Institut d'Hygiène de la Faculté de Médecine de Paris (R.), 708
Berry, Sir James, retirement of, 303
Bethlem Hospital Bill (P.I.), 891
Bezançon, Fernand, and Weil, Mathieu-Pierre, "The rheumatic disease," 1002
Bilharzia in the Transvaal, 257
Billig, Hannah, Case of syphilis of the uterus, 443
Biochemistry, Aids to (E. Ashley Cooper and S. D. Nicholas) (R.), 31; and medicine (A.), 1291; Text-book of (A. T. Cameron) (R.), 1284
Biology, domestic, 998; experimental: Factors Affecting the Distribution of Electrolytes, Water and Gases in the Animal Body (Donald D. van Slyke) (R.), 292
Birch, C. Allan, Recurrent colds (C.), 53; and Jones, H. Wallace, Case of coronary occlusion following parturition, 27
Birch, John, A case of borax poisoning, 287
Birkett, G. E., Radium treatment in carcinoma of the mouth and tongue, 953
Birmingham "carnival beds," 943; hospitals, 790; orthopædics at, 57; tuberculosis in, 258
Birt, Joseph, Carbon dioxide in anæsthesia (C.), 417, 520
Birth control (P.I.), 1101; clinic, medical experience of a, 791; clinics, 113; International Medical Group for the Investigation of, 636
Birthday honours (A.), 1183, 1239
Birth Injuries of Central Nervous System, Parts 1 and 2 (Frank R. Ford and others) (R.), 31
Birth-rate, decrease in (P.I.), 1151
Births, marriages, and deaths, 59, 112, 163, 215, 269, 321, 377, 426, 481, 531, 584, 635, 681, 738, 791, 840, 895, 945, 997, 1053, 1105, 1157, 1207, 1259, 1310, 1361
Biscuits and biscuit powder, Robb's nursery (R. and A.R.), 760
Bismogenol, 166
Bismuth therapy in syphilis, value of (C. Levaditi and L. Fournier), 692
Bizarro, G. H., Case of glass fragments in the knee, 1011
Bladder, cancer of, treatment of (J. Swift Joly) (M.T.T.), 1136; Pathology, Diagnosis and Treatment of Neoplasms originating in the Walls of the Urinary (L. R. Fifield) (R.), 1332
Bland-Sutton, Sir John, Bart., on a parasitic fœtus, 24
Blandy, the trial of Mary, 291
Blanford, H. O., Three conceptions of tuberculosis (C.), 259
Blind, welfare of the, 55; (A), 507; (P.I.), 632, 1358
Blindness, age-distribution of (A.), 666; from ophthalmia neonatorum, prevention of (A.) 612
Blome, Walter H., and Washburn, Homer C., Pharmacognosy and Materia Medica (R.), 762
Blomfield, J., on Anæsthesia in obstetrics, 498; Anæsthesia for opening retro-pharyngeal abscess (C.), 53
Blood, absorption of, from peritoneal cavity (Howard Florey and L. J. Witts), 1323; culture made easy, 321; donors, fasting (A.), 459; grouping: Rassenunterschiede des Blutes (Walter Scheidt) (R.), 399; groups, the inheritance of (L.A.), 1182; pressure, high, 396; transfusion: Die Bluttransfusion (E. Kubányi) (R.), 399; La Transfusion de la Sangre (Julio César Estol) (R.), 399, service, the Red Cross (A.), 508; Vessels of the Human Skin and their Responses (Thomas Lewis) (R.), 1020, German translation by Erich Schilff, 1128
Blumer, George, and others, Bedside Diagnosis (R.), 971
Blyth, Wynter, and Cox, Henry Edward, Foods, 7th ed. (R.), 1331
Board of Education: medical branch, 636
Bodansky, Meyer, Introduction to Physiological Chemistry (R.), 192
Body, the Human (L. Clendening) (R.), 399
Body of Yours, That (James W. Barton) (R.), 399
Bolton, Charles, Interpretation of gastric symptoms (Croonian lectures), 1159, 1211, 1263
Bolton, J. Shaw, Sir D. Ferrier and the West Riding Mental Hospital (C.), 787
Bombay: Grant Medical College, annual report, 1360
Bombay Medical Council, 375
Bond, C. Hubert, on the influence of parturition upon insanity and crime, 448
Bond, C. J., on eugenics and a national stock-taking (C.), 468

Bone pegs, 81
Bones and reputations, on damages to (Ernest W. Hey Groves), 167 ; (C.), 260
Bonney, Victor, A disclaimer (C.), 1202 ; Post-operative sepsis in general, and puerperal sepsis in particular, 435
Bootle, M.O.H.'s report, 777
Borax as a mosquito larvicide (A.), 767
Borax poisoning, a case of (John Birch), 287 ; (M.L.), 255
Borderland of physiology and psychology (L.A.), 1023
Borocaine, composition of (A.), 512
Bosanquet, W. Cecil, Note on use of tuberculin in pulmonary tuberculosis, with special reference to Dreyer's diaplyte, 74
Bousfield, Paul, Treatment of diphtheria carriers, 79
Bovine type tubercle bacilli from sputum in pulmonary tuberculosis (W. T. Munro and A. Stanley Griffith), 384
Bowel, case of cystic pneumatosis of (J. Silverstone), 129 ; (C.), 216
Braceborough Spa, 1104
Brain, abscess of the (E. Miles Atkinson) (Hunterian lecture), 483 ; (L.A.), 506 ; (C.), 625, 728 ; surgery of the, 48
Brain, W. Russell, Facial pain in pulmonary disease (C.), 575 ; Galatea or the Future of Darwinism (R.), 138 ; Posture of the hand in chorea and other states of muscular hypotonia, 439 ; Treatment of Tic (Habit-Spasm) (M.T.T.), 1295 ; and Cairns, Hugh, Treatment of sequels of head injuries (M.T.T.), 668 ; and Hunter, Donald, "Encephalo-myelitis following vaccination" (C.), 1250 ; and Valentine, F. C. O., Case of infection of meninges and blood stream by *Bacillus mucosus capsulatus*, 855
Bramwell, Crighton, on high blood pressure, 396 ; on treatment of auricular fibrillation, 657
Brandy, Gold Leaf (No. 1) (R. and A.R.), 1128
Brass Plate, Behind the (Alfred T. Schofield) (R.), 608
Breast, cancer of, position of histology in prognosis of (D. H. Patey and R. W. Scarff), 801 ; radium and (A.), 36 ; normal and abnormal states of the connective tissue of the, 707 ; sarcoma of, followed 20 years later by abdominal carcinoma (Andrew Fullerton), 26
Brehme, Th., Ueber Encephalographie im Kindesalter (R.), 294
Briggs, the late Dr. W. P., 942
Brighton hospitals, 790, and rates, 155 ; M.O.H.'s report, 1350
British Association meeting, preliminary programme, 1104
British Empire Cancer Campaign and the forthcoming International Convention, 95, quarterly meeting, 111
British Hospitals Association, programme of annual meeting, 1260
British Institute of Philosophical Studies, lectures, 943
British Institute of Radiology and Rontgen Society, officers of, 1156
British Medical Association : scholarships and grants-in aid of scientific research, 583
British Orthopædic Association, award of Robert Jones medal, 582
Broadbent, Sir John F. H., Bt., Some problems in the ætiology of cardiac failure, 217 ; Treatment of ascites by novasurol and ammonium chloride, 1326
Bronchiectasis, a case of, 238 ; treatment of (F. G. Chandler) (M.T.T.), 1084
Broncho-pneumonia in childhood, treatment of, 99
Bronchoscopy and Esophagoscopy (Chevalier Jackson), 2nd ed. (R.), 861
Bronkhorst, Willem, Kontrast und Schärfe im Röntgenbilde (R.), 502
Brook, Charles W., Improved inhaler (N.I.), 862
Brooke, R. St C., Myers, C. S., Punch, A. Lisle, and Wilkinson, Russell, Influence of ultra-violet rays on industrial output, 1120
Broomhead, C. H., and Williamson, C. L., Treatment of obesity by ultra-violet rays, 231
Brown, Frederick Gordon (O.), 161
Brown, H. C., Epidemic jaundice in the Andaman Islands, 388 ; An Indian remedy against dysentery (C.), 108
Brown, Dr. R. King, impending retiral of, 979
Brown, Robert Tilbury (O.), 207, 312
Browne, F. J., Advice to the Expectant Mother on the Care of her Health, 2nd ed. (R.), 503 ; Immediate repair of the torn perineum under local anæsthesia, 1281
Browne, Henry William Langley (O.), 575
Browning, Ethel, and Rowlands, M. J., Relation of deficiency of vitamin B to atony of stomach, 180
Brunyate, Thomas Tombleson (O.), 212
Bryan, C. W. Gordon, Treatment of diverticulitis of the colon (M.T.T.), 512
Buchanan, George, Epidemic catarrhal jaundice (C.), 1095

BUCHAREST, CORRESPONDENCE FROM.—Carbolic acid, sale of, 206—Gonorrhœa, criteria of recovery from, 775—Larynx, total extirpation of, for cancer, 207—Narcotic drugs, 774—Old age, the care of, 207—Salicylates, action of, on the kidneys, 207—Thalassotherapy, Congress of, in Rumania, 774

Buchbinder, J. R., The prevention of peritoneal adhesions (C.), 834

BUDAPEST, CORRESPONDENCE FROM.—Cell research, what is ? 572—Harvey, tribute to, 1195—Industrial Hygiene, International Congress on, 1195—Medical journal abused by an advertiser, 1195, periodical in four languages, 1195—Psycho-analysis, problems of, 1297—Public health in Hungary, 1194—Rontgen Society, Hungarian, 1298—Spa, essentials of a, 1297

Budge, Sir Ernest Wallis, The Divine Origin of the Craft of the Herbalist (R.), 659
Budget statement (P.I.), 891
Bugtrap, the wicker, 114
Bulleid, A., on influence of naso-oral sepsis on lungs and gastro-intestinal tract, 131
Bundaberg disaster, the (A.), 249, 1293
Burke, E. Tytler, Campaign against venereal diseases (C.), 882, 932
Burleigh, H. W., Motor-car accidents and hospitals (C.), 313
Burns, C. L. C., Convalescent measles serum (C.), 786
Burns, J. W., on a case of imperforate anus, 1177
Burns, treatment of, by tannic acid (R. M. Gordon), 336 ; (A.), 351 ; (C.), 519
Burrell, L. S. T., Treatment of pleurisy (M.T.T.), 304
Burrows, Roland, The medical practitioner in relation to the administration of justice, 183
Burt, J. B., on the ætiology of chronic arthritis, 395
Burton, A. H. G., Prevention of diphtheria (C.), 54 ; and Balmain, A. G., Relapses in scarlet fever, 1060
Butler, Josephine : Her Work and Principles (Millicent Fawcett) (R.), 294
Butter and cream, preservatives in (P.I.), 993
Buzzard, Sir Farquhar, on epidemic hiccup, 605

C

Cabot, Richard E., Physical Diagnosis, 9th ed. (R.), 86
Cain, or the Future of Crime (George Godwin) (R.), 862
Cairns, Hugh, Treatment of head injuries (M.T.T.), 566, 617 ; and Brain, W. Russell, Treatment of sequels of head injuries (M.T.T.), 668
Cairo Faculty of Medicine, centenary celebration of, 303 ; Victoria Hospital, presentation of clinic to, 529
Calcium "Sandoz," 791
Calmette, A., and others, L'infection bacillaire et la tuberculose chez l'homme et chez les animaux, 3rd ed. (R.), 1332 ; La vaccination préventive contre la tuberculose par le "B.C.G.," 84
Cambridge, M.O.H.'s report, 1300 ; new operating theatres at, 1204
Cameron, A. J. D., Gastro-duodenal ulceration (C.), 417, 521
Cameron, A. T., Text-book of Biochemistry (R.), 1284
Cameron, Hector Charles, Children in general practice, 1 ; Craniopagus, case of a, 284
Campbell, J. Argyll, and Cramer, W., Some effects of alteration of oxygen pressure in inspired air on cancer growth and body-weight of rats and mice, 828 ; and Hill, Leonard, Observations on preservation of life in shipwrecked individuals, 42
Campbell, Colonel Sir Robert Neil, death of, 577
Camptocormia, note on (G. F. Walker), 808
Canada, maternal mortality in (A.), 819 ; Royal College of Surgeons and, 831
Canadian emigrants, medical examination of (P.I.), 527, 1306, 1307
Cancer (P.I.), 1101 ; ætiology of, inquiry into (C.), 1250 ; apparent increase of (A.), 196 ; (D. F. Shearer), 204, (C.), 263 ; recorded increase of, further note on (D. F. Shearer), 1225 ; campaign, British Empire, 95, 111, 838, in Ireland, 206, 310, 737, in Manchester, 585 ; cells and oxygen pressure, 828 ; Conference, International, programme of, 1155 ; Convention, International (L.A.), 765 ; lectures on, at Leeds, 424, 479 ; parasitic ætiology of, recent work on (W. Cramer), 1347 ; radium for (L.A.), 973 ; radium therapy of, experimental basis of (S. Russ), 903, (C.), 1146, 1202 ; research (P.I.), 1048 ; funds for, 1312 ; bladder, treatment of (J. Swift Joly) (M.T.T.), 1136 ; of breast, histology in the prognosis of (D. H. Patey and R. W. Scarff), 801, radium and (A.), 36 ; of cervix, cystoscopy in, 759, treatment of, discussion on, 652 ; of colon and rectum, early diagnosis of (A. F. Hurst, T. W. Turner, and J. F. Venables), 1275 ; of larynx, 1175 ; of mouth and tongue, radium treatment in (G. E. Birkett), 953 ; mule-spinners' (M.L.), 308, and mineral oils (C. C. Twort and H. R. Ing), 752 ; of rectum : treatment and results, 152 ; (C.), 262, and colon, early diagnosis of, discussion on, 1124 ; of skin, treatment of (Louis Savatard) (M.T.T.), 823 ; of stomach, colloid (A.), 508 ; of uterus (A.), 145, operative treatment of (A.), 1291, radium treatment of, 759 ; reduction of mortality, 46
Cannings, Ralph B., Position of the voluntary hospitals (C.), 626
Caprokol (B. D. Houses), 740, 792
Carbon arc in therapeutics, 322
Carbon dioxide in anæsthesia (C.), 417, 471, 520 ; medical uses of (L.A.), 346 ; thermo-saline springs in the light of modern research (Adolf Schott), 546
Carbon monoxide as an industrial hazard, 881 ; from motor exhausts (A.), 1081 ; poisoning (H. Hartridge), 1137, 1210
Carbonic acid snow applicator (T. B. Sellors) (N.I.), 496
Cardiac disease, mental state in, 501
Cardiac failure, some problems in the ætiology of (Sir John F. H. Broadbent, Bt.), 217
Cardiac infarct, note on John Hunter's (John A. Ryle), 332 ; discussion on, 188, and coronary thrombosis (John Parkinson and D. Evan Bedford), 4
Cardiac murmurs, functional, origin and diagnosis of, 341
Carozzi, L., The problem of ankylostomiasis (C.), 1251
Carling, E. Rock, and Edwards, A. Tudor, Transpleural exploration of œsophagus (C.), 468
Carling, Esther, on the potentially tuberculous child, 722
Carlisle Infirmary and the Fever Hospital (A.), 1239
Carlton, C. Hope, and Maingot, Rodney, Injection treatment of varicose veins, 806, (C.), 1045
Carmichael, E. Arnold, and Graham, George, Local fat atrophy following insulin injections, 601
"Carnival beds," 943
Carotinæmia (A.), 565
Carpus, treatment of commoner injuries of the (E. Muirhead Little) (M.T.T.), 870
Carrier problem, the, 553
Carriers, diphtheria, treatment of (Paul Bousfield), 79
Carroll, Dr. J. D., death of, 882
Carson, H. W., on chronic appendicitis in children, 445
Carson, Joseph Thompson (O.), 1203
Case-taking, Clinical (George R. Herrmann) (R.), 191
Castellani, Dr. Aldo, foreign honours for, 200
Casuals, fees for the examination of, 586, 792

Cataract and its diagnosis, early state of, 860 ; congenital (A.), 457
Cautery, revival of the, 516
Cell research, what is ? (A.), 565 ; 572
Cellan-Jones, C. J., Ambulatory treatment of varicose veins (C.), 1354 ; Katharine M. and C. J., Injection treatment of varicose veins (C.), 884, Syringe for treatment of varicose veins (N.I.), 1022
Cerebellar function problems of (L.A.), 88 ; tumour, case of (A. Gurney Yates), 78
Cerebral arteries, congenital aneurysm of (A.), 1294 ; cortex : L'architecture cellulaire normale de l'écorce cérébrale (C. von Economo) (R.), 1230 ; hemisphere, removal of right, in man (A.), 1337 ; hemispheres, problems in physiology of (I. Pavlov) (Croonian lecture), 970 ; paralyses, infantile, treatment of (Neill Hobhouse) (M.T.T.), 409
Cerebro-spinal fluid, normal variations in the (A.), 1134,
Cerevisiæ compound (Barnold), 270
Cervix, cancer of, cystoscopy in, 759 ; treatment of, discussion on, 652
Chadburn, M., on radium treatment of uterine cancer, 759
Chadwick lecture on history of epidemiology (Sir W. H. Hamer), 1313
Chalam, B. S., and Crawford, J. A., Mosquito Reduction and Malaria Prevention, 2nd ed. (R.), 915
Chalmers, Sir Mackenzie, death of (A.), 142
Chance, Sir Arthur, resignation of, 249
Chandler, F. G., Treatment of bronchiectasis (M.T.T.), 1084
Chapman, P. D. H., Local fat atrophy following insulin injections (C.), 674
Character, Psychology of (A. A. Roback) (R.), 1331
Charity Organisation Society, special meeting, 303, 342
Charles, Sir Richard Havelock, baronetcy conferred on, 718
Chauffard, A., on William Harvey, 1036
Cheatle, Sir George Lenthal, on normal and abnormal states of connective tissue of breast, 707 ; on recent views on carcinoma of colon, 58
Cheek, sarcoma of, treated by operation and injections of colloidal lead (J. Bagot Oldham), 28
Chemistry and its Industrial Applications, An Epitomised Digest of (C. T. Kingzett), 4th ed. (R.), 607 ; of Familiar Things (S. S. Sadtler), 5th ed. (R.), 86 ; Physical, *see* Phase Rule
Chemotherapy, Principles and Practice of : with Special Reference to Syphilis (John A. Kolmer) (R.), 556
Chesterfield, M.O.H.'s report, 1351
Chetwood, Charles H., Practice of Urology and Syphilology, 4th ed. (R.), 1332
Cheval, Max, on treatment of cancer of cervix, 652
Child, the sensitive, 237
Child's dossier, the, 1312 ; Log, The (R.), 1054
Childbirth in India, conditions of (A.), 717 ; painless (L.A.), 559
Children, Diseases in, Aids to the Diagnosis and Treatment of (John McCaw), 6th ed. (R.), 137 ; experiments on, 983 ; in general practice (Hector C. Cameron), 1 ; typhoid fever in (A.), 143
Children's decorations for children's wards, 428
Chingford, M.O.H.'s report, 1352
Chirurgie, Die (M. Kirschner and O. Nordmann), 21st instalment, on Muscles, Bones, and Fasciæ) (R.), 815
Chloroma : a study of three cases (Hugh T. Ashby and G. S. Smith), 1169
Chocolate, Cadbury's dairy milk (R. and A.R.), 660
Cholagogues, physiological (A.), 562
Choledochus cyst (A.), 821
Cholera in Iraq (A.), 404
Chorea, and other states of muscular hypotonia, posture of the hand in (W. Russell Brain), 439
Christian thought, contribution of, to science and practice of medicine (Harold Balme), 531
Christie, W. F., and Love, R. J. McNeill, The surgical significance of corpulence, 1118
Church, Sir William, Bart. (O.), 939
Cicely Northcote Trust, 740
Cigarettes, "Rhodian," 1106
Ciliary Movement (J. Gray) (R.), 1332
Cinematograph for medical demonstrations, 921
Cirrhosis of liver (A.), 922
Clare, Joan Leigh Leigh, and Soames, Katharine Marjorie, Relative content of the fat-soluble vitamins A and D in a series of cod-liver oils, 150
Clark, L. H., Watters, B. D. H., and Russ, S., Physics in Medical Radiology (R.), 1076
Clarke, J. Tertius, on the pathogenesis of rheumatic fever in climatological relationship with a possible insect carrier, 446
Claye, A. M., and Croft, E. O., Case of labour with complete occlusion of external os, 231
Clegg, J. Gray, on ophthalmology in relation to general medicine, 83
Clendening, L., the Human Body (R.), 399
Clinical medicine in the East, 1364 ; Methods : Lehrbuch der Klinischen Untersuchungensmethoden für Studierende und praktische Aertzte (H. Sahli), Vol. I., 7th ed. (R.), 292
Clow, Alice E. Sanderson, Treatment of disturbances incidental to early menstrual life (M.R.T.), 460
Club-foot (A.), 866 ; its nature and treatment (A. Wilfrid Adams), 852
Coates, Vincent, and Delicati, J. L., Liver feeding in multiple infective arthritis, 1069
Cocaine and cocaine hydrochloride, exemption orders for (P.I.), 1202
Cochrane, W. A., Sacro-iliac subluxation (C.), 54
Cocoa, centenary of the invention of, 842
Cod-liver oil, estimation of vitamin A in, 148 ; vitamin assay of (A.), 199 ; vitamin D value of (C.), 261 ; tablets, vitamin-content of (M.L.), 787
Cod-liver oils, relative content of the fat-soluble vitamins A and D in a series of (Joan L. L. Clare and Katharine M. Soames), 150 ; vitamin A content of (C.), 1353
Cold, the common, 370 ; alkali reserve and the, 428 ; gift to Johns Hopkins University for research into, 162, 370
Colds, recurrent (C.), 53, 160, 315, 372
Colebrook, Dora C., Varicose ulcers : comparison between ultra-violet light and Unna's paste treatments, 904
Coleman, Frank, on the pulpless tooth, 654
Colitis, ulcerative (L.A.), 865 ; treatment of, discussion on, 857 ; (C.), 931, 1043, 1096
Collie, John, Tuberculosis and employment (C.), 1096
Collier, James, Epilepsy (Lumleian lectures), 587, 642, 687 ; on the ocular complications of encephalitis lethargica, 339
Collins, E. Treacher, on the natural history of retinal neoplasms, 860
Collins, J. Rupert, Aural systemic infection (C.), 263
Collis, Edgar L., Disposal of the dead (C.), 371
Colon, carcinoma as applied to the, some recent views on, 58 ; diverticulitis of, treatment of (C. W. G. Bryan) (M.T.T.), 512 ; Tonic Hardening of the (T. Stacey Wilson) (R.), 658 ; and rectum, cancer of, early diagnosis of (A. F. Hurst, T. W. Turner, and J. F. Venables), 1275
Colonial appointments to medical men, 737
Colonic spasm in diverticulitis (C.), 573
Colonies, Crown, medical staff in the (P.I.), 676
Colour-index, note on the fallacy of the (B. Derham), 338
Commonwealth Fund, the (A.), 665
" Conduct of Medical Practice " (C.), 209
Conduct, physical basis of (A.), 509

CONFERENCES. — Cancer, International Conference on, 1155—Chemical Industry, at London, 893—Light and Heat in Medicine and Surgery, International, at London, 893—Midwife, the practising, in relation to protection of motherhood, 479, 534—Race Betterment, third, at Michigan, 463—Rheumatic diseases, at Bath, 512, 616, 923, 981, 1015—Silicosis, at Johannesburg, 109—Tuberculosis, Easter Conference at Oxford, 566

Congenital morbus cordis, case of, studied for 12 years (Francis Bach), 1009

CONGRESSES.—Dairy Congress, World's, 1309—Dermatology and Syphilology, International, at Copenhagen, in 1930, 718 — Incorporated Association of Hospital Officers, 1183 — Industrial Accidents and Occupational Diseases, International, at Budapest, 161, 267, 318, 893, 1195—Light, International, at Lausanne, 893—Military Medicine and Pharmacy, International, at Warsaw, 95 — Ophthalmological Society : annual congress, 859, 967, 1294—Oto-Laryngology, International, at Copenhagen, 195, 1258—Oxford Ophthalmological, 583—Psychology, International, at Yale University, 375—Public Health, Royal Institute of, at Dublin, 146—Radiology, Russian Congress of, at Kiev, 633—Royal Sanitary Institute, at Plymouth, 318, 713, 1308—Surgical Congress, German, 1088—Thalassotherapy, International, at Bucharest and Constanza, 512, 633, 774—Tropical Association, Far Eastern, in Calcutta, 100—Tropical Medicine and Hygiene, International, in Cairo, 303—Urological, in Berlin, 789

Conn, Harold J., Elementary Laboratory Guide in General Bacteriology (R.), 1180
Constitutional Factor in Disease, The (Arthur F. Hurst) (R.), 608
Continental Anglo-American Medical Association (A.), 979, annual meeting, 995
Contributory schemes, 516, 529, 732
Convalescence (A.), 302
Convalescent homes, two useful, 428
Conveniences, public, at railway stations (M.L.), 102
Cook, Captain : his dietetic sagacity, 481
Cook, L. C., and McCowan, P. K., The mental aspect of chronic epidemic encephalitis, 1316
Cooke, W. E., Case of early tropical elephantiasis treated by protein shock, 390 ; Liver in pernicious anæmia (C.), 989 ; and Ponder, Eric, The Polynuclear Count (R.), 761
Cooked foods and hospital pressure, 375
Coolidge tube, the new, 1042
Coombs, Carey, on cardiac infarction, 189 ; on mental state in cardiac disease, 501
Coope, Robert, Colonic spasm in diverticulitis (C.), 573
Cooper, E. Ashley, and Nicholas, S. D., Aids to Biochemistry (R.), 31
Cope, Zachary, Clinical Researches in Acute Abdominal Disease, 2nd ed. (R.), 1285
Copper as a constituent in Harrogate water, 1312 ; salts in anæmia, 1042
Core, Donald, Examination of the Central Nervous System (R.), 861
Cork, meat inspection in, 413
Cornish mines, health conditions in (P.I.), 734
Coronary occlusion following parturition, case of (H. Wallace Jones and C. Allan Birch), 27 ; thrombosis, cardiac infarction and (John Parkinson and D. Evan Bedford), 4
Coroner and medical practitioner (M.L.), 985 ; and medical status (M.L.), 880 ; on anæsthetics, a (A.), 716
Coroners Acts, criticism of (M.L.), 1196
Corpulence, the surgical significance of (R. J. McNeill Love and W. F. Christie), 1118
Correlation of physical and mental excellence (A.), 93
Correspondents, answers to, M.D., 636
Cottage hospital's treasure, a, 267
Cottle, Maurice H., and Hollender, Abraham R., Physical Treatment in Diseases of the Eye, Ear, Nose, and Throat (R.), 293
Cotton, T. F., on diathermy in cardio-vascular disturbances, 187 ; treatment of aneurysm (M.T.T.), 1029
Courtauld Institute of Biochemistry, 1188, 1251 ; (A.), 1291
Cova, Felix, Atlas Thoracoscopicon (R.), 503
Coventry Hospital Saturday Fund, 190
Coward, Katharine, H., and Eggleton, P., Content of vitamins A and C in watercress, 97
Cox, Henry Edward, and Blyth, Wynter, Foods, 7th ed. (R.), 1331
Crafts, Leo M., Epidemic Encephalitis (Myelo-encephalitis) (R.), 191
Craggs, Sir John, death of, 979
Cramer, W., Recent work on the parasitic ætiology of cancer, 1347 ; and Campbell, J. Argyll, Some effects of altered oxygen pressure in inspired air on cancer growth and body-weight of rats and mice, 828
Craniopagus, a case of a (H. C. Cameron), 284
Crawford, J. A., and Chalam, B. S., Mosquito Reduction and Malaria Prevention, 2nd ed. (R.), 915

Cream, characteristics of, 894; emulsifiers in, use of (P.I.), 581; preservatives in, 624; regulations, the, 258
Crew, F. A. E., Organic Inheritance in Man (R.), 293
Crime, the treatment of (L.A.), 1129
Crookshank, F. G., Splenomegaly associated with aspergillosis (C.), 933
Croonian lecture on cerebral physiology (Ivan Pavlov), 970; lectures on interpretation of gastric symptoms (Charles Bolton), 1159, 1211, 1263
Crosby, Thomas Villiers (O.), 994
Crowther, James Arnold, Molecular Physics and the Electrical Theory of Matter, 4th ed. (R.), 862
Cruelty to animals, charge of: successful appeal (M.L.), 206
Cruickshank, Robert, The Schick test and immunity to diphtheria, 76
Cullen, G. Matheson, "Astonished" infants (C.), 1364; Vesalius and the Inquisition myth (C.), 105
Culpin, Millais, the Asthma Research Council (C.), 626; Medicine and the Man (R.), 608; A study of the incidence of the minor psychoses, 220, (C.), 470
Culture media, chemical changes in (A.), 977
Cumberbatch, E. P., and Robinson, C. A., Campaign against venereal disease (C.), 933
Cumston, Charles Greene (O.), 886

D

Dairy farming in the Netherlands and Denmark (A.), 663
Dairyman imprisoned (M.L.), 1140, 1196; (C.), 1201
Dale, H. H., and Lewis, Thomas W., Harvey and the circulation of the blood, 1037
Dalrymple House, annual report, 1260
Dana, Charles L., the Peaks of Medical History, 2nd ed. (R.), 915
Dangerous drugs, fishing vessels and (M.L.), 152; Act, failure of prosecution under (M.L.), 1296; register (M.L.), 621
Dates, note on some intestinal bacteria isolated from packed (R. F. Hunwicke and G. N. Grinling), 1071
Davidson, Dr. Isaac Alexander, 943
Davidson, Stanley, McCrie, J. G., and Gulland, G. Lovell, Treatment of pernicious anæmia with liver and liver extracts, 847
Davies, A. Vernon, Radium treatment of cancer (C.), 1202
Davies, D. Leighton, Chronic glaucoma: importance of early diagnosis, 699
Davies, F., and Wolff, E., on fragmentation of the retinal blood stream, 967
Davis, E. D., on influence of naso-oral sepsis on lungs and gastro-intestinal tract, 130
Dawson of Penn, Lord, Pernicious anæmia, 115; on "Those other Practitioners" (A.), 244
Daylight, penetration of, into buildings (A.), 36
Days, a Book of (R.), 166
De, P., Account of experiments on toxic substances in human fæces by, 176
Dead, disposal of the (L.A.), 297; (C.), 371, 417, 418, 574; persons found, in London (P.I.), 526; sanitation of the (A.), 666
Deaf, education of the (A.), 92
Deafness, alleviation of (L.A.), 241, operation for (C.), 54, 109, 158, 159; chronic middle-ear, medical diathermy in (Dan McKenzie), 597; (C.), 673; nasal obstruction as a cause of (C.), 728, 786, 835
Deaner, S., Case of acute staphylococcal pyæmia, 391
Death certification (L.A.), 139; by unregistered doctor (M.L.), 1087
Defæcation, an aid to, 534
Delafield, Frances, and Prudden, T. Mitchell, A Text-Book of Pathology, 14th ed. (R.), 608
Delicati, J. L., and Coates, Vincent, Liver feeding in multiple infective arthritis, 1069
Denbighshire hospitals, 267
Dengue in Durban, 256
Denmark, medical visit to, 938
Dental benefit, a year's experience of (L.A.), 140; Board, the (A.), 1025; officers in the Royal Navy, 680; operations, medical perspective of multiple extractions and other major (Harvey Hilliard), 793, 895; (C.), 931, 990; practice in Victoria (Australia), 267; Register, removal of name from (M.L.), 1040; registers, medical and (A.), 510
Dentist, free choice of (P.I.), 938
Dentistry, medical profession and, 790; practice of, by medical men in Ireland, 465
Dentists Register and the non-payment of retention fees (A.), 197
Dentures, steel (A.), 1292
De Quervain, Prof., sixtieth birthday of (A.), 1027
Derham, B., Note on the fallacy of the colour-index, 338
Dermatitis, treatment of occupational (non-malignant) (W. J. O'Donovan) (M.T.T.), 719
Dermatology, the dog and cat in (A.), 976
Deutsch, Felix, and Kauf, Emil, Heart and Athletics (R.), 556
Devonshire Ambulance Service, 985
Dextrocid (Hans Potratz), 270
Diabetes in Germany, 257; optimum diet in (A.), 349
Diagnosis, Bedside (George Blumer and others) (R.), 971; Physical (Richard E. Cabot), 9th ed. (R.), 86
Diathermy in relation to circulatory disturbances, discussion on, 187; of the tonsils, surgical (A.), 1135
Dictionary, American Illustrated Medical (W. A. Newman Dorland), 14th ed. (R.), 293; of Bacteriological Equivalents (W. Partridge) (R.), 659; of National Biography (1901–11) (R.), 239
Diet and Disease (Cecil Webb-Johnson) (R.), 709
Diets for infants and children: Die Ernährung gesunder und kranker Kinder (E. Nobel, C. Pirquet, and R. Wagner), 2nd ed. (R.), 1231; of low residue (A.), 616
Digitalis, rational use of (Bruce Williamson), 591
Digitruss, the, 62
Dilling, W. J., on colloidal lead, 706
Dillon, T. W. T., Facial lupus (C.), 158
Dimol catarrh snuff, 740
Dining-car attendants, railway, health of (P.I.), 374

DINNERS.—Dublin 83rd hospital, 101—Eugenics Society Galton Memorial dinner, 424 — Harveian Society of London, 1298—Hunterian bicentenary: festival dinners, 367 — Incorporated Association of Hospital Officers, 1183—Indian Medical Service, 1350 — Irish Medical Schools and Graduates Association: jubilee banquet, 633—Medical Insurance Agency, 1205—Medical Practitioners' Union, 471—Medical Society of London, 633—Medical Women's Federation, 1054—Moorfields students, past and present, 375—Prince of Wales's Hospital, Tottenham, 736 — Royal College of Surgeons in Ireland, 1103—Royal National Orthopædic Hospital: officers and staff, 267—Royal Society of Tropical Medicine and Hygiene, 1348—Society of Apothecaries of London, 58—Tavistock Clinic seventh birthday, 318

Diphtheria, control of, in crowded institutions, discussion on, 965; immunisation against, 268, 1308; inoculation against, 1041; prevention of (C.), 54, 106, 416, 469; Schick test and immunity to (Robert Cruickshank), 76; serum treatment of (A.), 1082; carriers (A.), 245, treatment of (Paul Bousfield), 79
Diphtheroids and Streptococci: Annals of Pickett-Morrison Research Laboratory (R.), 30
Diploma, imperial, question of, 831
Disability due to respiratory diseases (A.), 1131
Disclaimer, a (C.), 1202
Disinfection, terminal (A.), 921
Distemper in ferrets (L.A.), 918
Diverticulitis, colonic spasm in (C.), 573; surgical treatment of, 396; of colon, treatment of (C. W. Gordon Bryan) (M.T.T.), 512
Dodds, E. C., The ovarian hormone, 1107; and Beaumont, G. E., Recent Advances in Medicine, 4th ed. (R.), 814
Doflein, Franz, Lehrbuch der Protozoenkunde, 5th ed. (R.), 914
Dog and cat in dermatology, the (A.), 976
Dog Owners, Letters to Young (A. J. Dawson) (R.), 270
Dogs, "fright disease" in (A.), 249; (C.), 316; the intelligence of (A.), 868; Protection of, Bill (P.I.), 373, 936
Donaldson, Malcolm, on treatment of cancer of cervix, 653
Donations and bequests, 111, 200, 268, 319, 461, 529, 555, 601, 789, 795, 893, 941, 990, 1051, 1084, 1156, 1301, 1341
Dorland's American Medical Dictionary, 14th ed. (R.), 293
Doyle, J. L. Cyril, The future of medical practice (C.), 208
Drainage-tubing, a new (H. H. Greenwood) (N.I.), 1286
Dreyer's diaplyte in pulmonary tuberculosis, 74
Drug-addiction, protein treatment of (A.), 350, 428
Drugs, dangerous, importation of (P.I.), 581; noxious, clergyman's mail order business in (M.L.), 411
Drummond, J. C., Vitamin A content of cod-liver oils (C.), 1353
Drunk or not drunk (M.L.), 930
Drunkenness and civil and criminal responsibility, discussion on, 235; in London (P.I.), 631
Dublin school-children, care of, 534
Duckworth, Sir Dyce, Bt. (O.), 210
Dudley, S. F., on control of diphtheria in crowded institutions, 965; on the epidemiology of typhoid fever in the Navy, 393
Dufourt, A., and Péhu, M., La Tuberculose Médicale de l'Enfance (R.), 1285
Dujardin, E., New method of partial rhinoplasty, 1280
Dukes, Cuthbert, on early diagnosis of cancer of rectum and colon, 1125
Dundas-Grant, Sir James, An operation for the alleviation of deafness (C.), 109
Dundee, dissatisfaction with panel practice at, 102
Dunhill, Mr. T. P., appointed Surgeon to Royal Household, 769
Dunn, J. Shaw, on high blood pressure, 396
Dyke, S. C., Liver treatment of pernicious anæmia, 877
Dysentery, an Indian remedy against (A.), 38; (C.), 108; bacillary, localised outbreak of, in Smethwick (A. G. Millott Severn and Ewart W. Evans), 126
Dysphagia due to pharyngeal paralysis, 1174
Dystrophia musculorum progressiva, pathogenesis of (Ken Kuré), 441

E

Eales's disease, a case of (Allister M. MacGillivray), 651
Ear, Diseases of the, Handbook of (Richard Lake and E. A. Peters), 5th ed. (R.), 451; internal, vasomotor affections of, 1176; middle, *see* Middle ear
Eason, H. L., appointed to General Medical Council, 249
East, W. Norwood, on problems in forensic psychiatry, 394
East Stow, M.O.H.'s report, 1352
Eastwood, Sibyl R., on gastric secretion and other digestive factors in rosacea, 290
Eclampsia, case of, treated with spinal anæsthesia (R. H. Paramore), 963; standard of results in the treatment of, 1281; treatment of (L.A.), 1289
Ectopic pregnancy: case of isthmial, 82
Edinburgh Bill, the, dealing with venereal disease (L.A.), 454; 624; 773; (P.I.), 887; Corporation, medical adviser to, 773; Health Week, 257; new radiological department at, 569
Edwards, A. Tudor, and Carling, E. Rock, Transpleural exploration of œsophagus (C.), 468
Edwards, Harold, Mortality of operations upon the enlarged prostate, 77
Eggleton, P., and Coward, Katharine H., Content of vitamins A and C in watercress, 97
Eisenberg, A. A., Principles of Bacteriology, 4th ed. (R.), 1286
Elder, William, Studies in Psychology (R.), 815

Electrocution, case of, with notes on clinical value of lobeline (J. Gwynne Morgan and Arthur J. Amor), 756
Electro-medical apparatus, Arnberg's (N.I.), 862
Elephantiasis, case of early tropical, treated by protein shock (W. E. Cooke), 390
Ella Sachs Plotz Foundation grants, 318
Ellis, Edward A., and Mayo, Herbert R., Case of traumatic pancreatitis, 495
Ellis, Reginald, on high blood pressure, 396
Elsie Inglis Memorial Hospital, 739
Emergencies of a General Practice (N. C. Morse), 2nd ed. (R.), 135
Emergency Reminder, the Doctor's, 842
Emphysema, case of universal subcutaneous surgical, associated with spontaneous pneumothorax (M. Gerber), 1327; subcutaneous, complicating labour (M. Salmond), 757; (C.), 988, 1354
Empyema, treatment of (L.A.), 764; interlobar, and abscess of the lung (A.), 1336
Encephalitis, chronic epidemic, mental aspect of (P. K. McCowan and L. C. Cook), 1316; Epidemic (Encephalomyelitis) (Leo M. Crafts) (R.), 191, later phases of (L.A.), 1333; lethargica (M.L.), 514; (P.I.), 1048, and adolescent instability, 395, ocular complications of, discussion on, 339; post-vaccinal (A.), 1290
Encephalographic in Kindesalter, Über (Th. Brehme) (R.), 294
Encephalo-myelitis following vaccination (C.), 1094, 1201, 1250, 1301
Endocrine balance, a study of (A.), 407
Endocrines, *see also* Internal secretion
Endotheliomata, malignant intracranial (A.), 349
Enteric outbreak at Galashiels, 368
Enzyme, Lehrbuch der (Carl Oppenheimer) (R.), 136
Ephedrine in leprosy (A.), 1080; the uses of (A.), 144
Epidemics, Forecasting: Climate and Disease Incidence in India (Sir Leonard Rogers) (R.), 557
Epidemiology, history of, during last hundred years (Sir W. H. Hamer), 1313
Epilepsy (L.A.), 711; (James Collier) Lumleian lectures, 587, 642, 687; (L. J. J. Muskens) (R.), 1284; and crime, 394; case of, cured by ovariectomy (R. R. S. Mackinnon), 910; in dementia præcox (C.), 884
Epsom College, bequest to, 1360
Ergosterol, irradiated, excess of (A.), 1186; in the treatment of rickets (R. Aidin), 229
Estol, Julio César, La Transfusion de la Sangre (R.), 399
Ether anæsthesia, the discovery of (A.), 566, 1128; anæsthetic, two simple tests for impurities in (Edwin B. Robinson), 856
Etienne, Dr., Traitement des Fractures par le Praticien (R.), 555
Eugenic settlement, a plea for a, 216
Eugenics and heredity, 463; and a national stock-taking (L.A.), 401; (C.), 468; La Question Eugénique dans les divers pays (Marie T. Nisot), Vol. I. (R.), 1231
Eugenics Society, Galton anniversary dinner and lecture, 214, 424
Evans, Alwen M., Short Illustrated Guide to the Anophelines of Tropical and South Africa (R.), 136
Evans, Ewart W., and Severn, A. G. Millott, A localised outbreak of bacillary dysentery in Smethwick, 126
Eve, Frank C., Diagnosis of pernicious anæmia by "blood-haloes," 1070
Ewing, James, A Treatise on Tumours, 3rd ed. (R.), 659
Examinations, practical and viva voce, 1210
Exercise, violent, in relation to the possibility of strain (A. Abrahams), 429
Exhibition for a hospital, 529
Extractions, multiple, and other major dental operations, medical perspective of (H. Hilliard), 793, 895; (C.), 931, 990
Eye, action of light on the (A.), 299; Development of the Human (Ida C. Mann) (R.), 1229; movements of, in reading (A.), 664; silver nitrate in the (A.), 716; Ear, Nose, and Throat, Diseases of, Physical Treatment in (Abraham R. Hollender and Maurice H. Cottle) (R.), 293; shades, "Portia" non-flam., 1260

F

Facial neuralgia associated with pulmonary abscess, case of (R. C. Hutchinson and J. S. B. Stopford), 494; pain in pulmonary disease (C.), 575
Factory Acts, a gap in the (M.L.), 205; inspectors and the prevention of accidents (P.I.), 524, in Scotland (P.I.), 473, 581, shortage of (P.I.), 523
Fæces, unrecognised toxic substances in human (Douglas Chalmers Watson), 174; discussion on, 236
Fagge, C. H., Complications of fractures of the long bones, 122; on hare lip, 1227
Fairbank, H. A. T., Diagnosis of a limp, with special reference to the hip-joint, 19; on operative treatment of recent fractures, 811
Fatigue, Factors Governing Speed and Recovery from (A. V. Hill) (R.), 29
Faulder, T. Jefferson, An operation for the alleviation of deafness (C.), 159
Fawcett, Dame Millicent, Josephine Butler: Her Work and Principles (R.), 294
Fawcett, John, and Gibson, A. G., Case of splenic anæmia due to a streptothrix organism, 1171
Feeding and the Nutritional Disorders in Infancy and Childhood (Julius H. Hess) (R.), 137; Infant and Child (H. B. Wilcox); Vol. XII. of Haynes' Clinical Pediatrics (R.), 1230
Feiling, A., on the ocular complications of encephalitis lethargica, 339; on sciatica: its varieties and treatment (Hunterian oration), 449
Feldman, Herman, Prohibition: Its Economic and Industrial Aspects (R.), 557
Feldman, W. M., Principles of Antenatal and Postnatal Child Hygiene (R.), 32
Fellowship of Medicine and Post-Graduate Medical Association courses, lectures, and demonstrations, 55, 111, 162, 213, 267, 582, 1199
Felsol, 534
Ferrier, Sir David (O.), 627; and the West Riding Mental Hospital (C.), 786; proposed memorial to (A.), 1238
Fibiger, Johannes (L.A.), 243
Fibroid, sarcomatous metaplasia of a, case of, 605
Fifield, Lionel Richard, death of, 616, (O.), 677; Pathology, Diagnosis and Treatment of Neoplasms of Urinary Bladder (R.), 1332
Fildes, Geoffrey, MacLean, Hugh, and Jones, Isaac, Cure of gastric and duodenal ulcers by intensive alkaline treatment, 14, (C.), 157, 521
Film, a shocking (A.), 247
Film-actor, the young (A.), 300
"Finclure," 1247
Findlay, Alexander, The Phase Rule and its Applications, 6th ed. (R.), 608
Fischer, Albert, Gewebezüchtung, 2nd ed. (R.), 294
Fisher, A. G. Timbrell, Treatment by Manipulation (2nd ed. of "Manipulative Surgery") (R.), 762
Fisherman, a medical, 792
Fishing vessels and dangerous drugs (M.L.), 152
FitzPatrick Lectures: History of British Midwifery from 1650 to 1800 (Herbert Spencer) (R.), 29
Fitzwilliams, Duncan, on the rôle of radium in treatment of cancer of breast and tongue, 554
Flask, a useful pocket, 792
Flat-foot, post-office messengers and (P.I.), 526
Fletcher, Cavendish (O.), 837
Flexner, resignation of Dr. Abraham, 1135
Flood, after the (A.), 142
Floods, the London (L.A.), 90; 529
Florey, Howard, and Witts, L. J., Absorption of blood from peritoneal cavity, 1323
Flying, the Art of, 1311
Fœtal architecture (L.A.), 296
Food, preservatives in, 57; recent advances in knowledge of, discussion on, 184; sale of, habitual offenders and the (C.), 1201
Foods (Wynter Blyth and H. E. Cox), 7th ed. (R.), 1331
Foot-and-mouth disease in man (J. A. Arkwright), 1191
Forbes, Duncan, Fatality-rates of small-pox in vaccinated and unvaccinated (C.), 208
Forbes, J. Graham, Prevention of diphtheria (C.), 469
Forceps and retractor, modified (G. W. Morey) (N.I.), 1226
Forceps delivery, reduction of, as basis for prophylactic gynæcology, 450
Ford, A. P., on the work and aims of tuberculosis care committees and kindred agencies, 234
Ford, Frank R., and others, Birth Injuries of Central Nervous System (R.), 31
Ford, William W., Text-Book of Therapeutics (R.), 138
Fordyce, A. Dingwall, on detection and cure of rheumatism in children, 190
Foreign bodies, metallic, invention for localisation of, 732
Forensic medicine, hair in, 946; post-graduate teaching in (A.), 822
Forensic psychiatry, problems in, 394
Forman, Col. Robert Hall (O.), 409
Formulary, Lippincott's Pocket (George E. Rehberger) (R.), 815
Fornet, F. W., Oral administration of insulin (C.), 159
Foster, the late Mr. W. J., 1104
Fothergill, E. Rowland, Doctors and the Nursing Homes Registration Act (1927), 935
Foundling site, the (A.), 717; (P.I.), 735; (C.), 785; 1103, 1325; building on (P.I.), 1153
Fournier, L., and Levaditi, C., the value of bismuth therapy in syphilis, 692
Fracture reduction, the ritual of, 80
Fractures of the long bones, complications of (C. H. Fagge), 122; recent, operative treatment of, discussion on, 809; Traitement des, par le Praticien (Dr. Etienne) (R.), 555
Frakturen und Luxationen (K. H. Bauer) (R.), 1285
France, Federation of Health Resorts of, 1205
Frances Wood Memorial prize, 1020
Fraser, F. R., on the treatment of pernicious anæmia, 185, 872
Frederick, the Emperor: his fatal illness (A.), 248
Freeman, John, Conditioned reflexes in asthma (C.), 1096; on the pathological mechanism of the asthma syndrome, 288
Friend, G. E., A critical examination of some cases of a scarlatiniform type, 274
Friesian cow, the, 730
"Fright disease" in dogs (A.), 249; (C.), 316
Fry, L. S., Note on treatment of tuberculous disease of spine in young children, 600
Fullerton, Andrew, Sarcoma of breast followed 20 years later by abdominal carcinoma, 26

G

Gainsborough, H., Note on the use of benzyl cinnamic ester in tuberculosis, 908
Gait, normal and abnormal (A.), 404
Galatea, or the Future of Darwinism (W. Russell Brain) (R.), 138
Galbraith, S. Nicol, Tenterden paratyphoid epidemic (C.), 106
Gall-bladder, Liver, and Pancreas, Surgical Diseases of the, and their Treatment (Moses Behrend) (R.), 86
Garner, Col. Cathcart, death of, 368
Garrod, Sir Archibald, The lessons of rare maladies, 1055
Garrow, R. P., Death registration and the fatality-rates of small-pox (C.), 105, 208
Gases, poisonous, storage of (P.I.), 1254
Gask, G. E., Radium in the treatment of malignant disease, 843
Gastric and duodenal ulcers, cure of, by intensive alkaline treatment (Hugh MacLean, Isaac Jones, and Geoffrey Fildes), 14, (C.), 157; series of 183 consecutive cases of, 706
Gastric disease, alkalis as therapeutic agents in (A.), 1235; symptoms, interpretation of (C. Bolton) (Croonian lectures), 1159, 1211, 1263; ulcer, 83
Gastro-duodenal ulceration (L.A.), 34; (C.), 104, 210, 264, 417, 469, 521, 574, 834
Gautier, Claude, and Wolff, René, Le métabolisme basal (R.), 85
Gemmell, A. A., on cystoscopy in cancer of cervix, 759

General Medical Council and income-tax (A.), 715; appointment to, 1028; committees, 1199; penal cases, 1147, 1197; presidency of (A.), 1079; President's address, 1089
General paralysis, incidence of (A.), 350
Gerber, M., Case of universal subcutaneous surgical emphysema associated with spontaneous pneumothorax, 1327
Germany, anæsthetics in (A.), 978; Central Information Bureau, address of, 57; cost of medical study in, 1194; statistics of the medical profession in, 731
Gibberd, G. F., Induction of labour with animal bladders containing glycerine, 1325
Gibson, A. G., and Fawcett, John, Case of splenic anæmia due to a streptothrix organism, 1171
Gibson, Paul C., The auscultatory gap (C.), 987
Gillett, Henry T., Campaign against venereal diseases (C.), 883
Gilliatt, William, on anæsthesia in obstetrics, 498
Githens, T. S., and Solis-Cohen, S., Pharmacotherapeutics (R.), 1286
Given, J. C. M., Palæopathology and evolution, 164
Gladstone, Reginald J., and Wakeley, Cecil P. G., Relative frequency of various positions of vermiform appendix: analysis of 5000 cases, 178
Glasgow hospitals, 424; V.D. Bill, 830
Glass as a poison, 1158
Glaucoma, causation of (A.), 765; chronic: importance of early diagnosis (D. Leighton Davies), 699
Globus pallidus, histology of the, 500
Glover, E., on the psychoanalysis of the alcoholic, 704
Glover, J. Alison, Hygiene at the Royal Hospital School, Greenwich (C.), 729; nasopharyngeal epidemics in public schools, 1329
Gloves, Franklin's super surgeons', 322
Glycosuria and heredity (L.A.), 1077; and life assurance (C.), 1158
Godwin, George, Cain, or the Future of Crime (R.), 862
Goitre, iodine deficiency and (A.), 667; iodine in the prophylaxis of (L.A.), 345
Gonorrhœa, antenatal treatment of, discussion on, 757; criteria of recovery from, 775
Gonorrhœal urethritis in young children (C.), 158
Goodall and Washbourn's Text-book of Infectious Diseases, 3rd ed. (R.), 343
Gordon, A. Knyvett, Liver in pernicious anæmia (C.), 933
Gordon, R. M., Treatment of burns by tannic acid, 336
Gorilla's bed, the, 378
Gough, Alfred, on a case of placenta accreta, 1177
Goulden, Charles, on illumination of field of operation in ophthalmic surgery, 968
Goulston, Arthur (O.), 57
Goulstonian lectures on some problems of nephritis (T. Izod Bennett), 535, 637, 741
Gourlay, Elizabeth, Campaign against venereal disease (C.), 989
Graham, George, and Carmichael, E. Arnold, Local fat atrophy following insulin injections, 601
Grant, A. L., Recurrent colds (C.), 316
Gray, A. M. H., Treatment of onychia (M.T.T.), 1340
Gray, J., Ciliary Movement (R.), 1332
Greenwich Royal Hospital School, hygiene at the (C), 673, 729
Greenwood, H. H., A new drainage-tubing (N.I.), 1286
Greeves, R. Affleck, on causes and treatment of iridocyclitis with raised tension, 967
Gregorson, A. W., Note on ultra-violet radiation in pemphigus neonatorum, 703
Grenfell Medical Mission, 892
Griffith, A. Stanley, and Munro, W. T., Bovine type tubercle bacilli from sputum in pulmonary tuberculosis, 384
Griffiths, Joseph, Commissions in the R.A.M.C. (C.), 155
Grinling, G. N., and Hunwicke, R. F., Note on some intestinal bacteria isolated from packed dates, 1071
Grocers' Company research scholarship, 318
Groves, Ernest W. Hey, On damages to bones and reputations, 167; on operative treatment of recent fractures, 810; Our hospital system, 251
Growth, Healthy (Alfred Mumford) (R.), 708
Gudger, E. W., Paralysis cured by malaria: first known case—1850, 585
Guillaume, A. C., Vagotonies, Sympathicotonies, Neurotonies, 2nd ed. (R.), 1127
Gulland, G. Lovell, Davidson, Stanley, and McCrie, J. G., Treatment of pernicious anæmia with liver and liver extracts, 847
Gunshot wounds, treatment of, and Ambroise Paré (Theodore Meyer-Steineg), 840, 896
Guthrie, the late Dr. Thomas C., 478
Gymnastics, special: Das Münchener Sonderturnen und andere Wege zür Körperlichen Ertuchtigung (Fritz Lange and others) (R.), 1331; Swedish Medical, Technique of (J. Arvedson) (R.), 1127
Gynæcology (Howard A. Kelly and others) (R.), 1179; Aids to (Richard E. Tottenham), 7th ed. (R.), 709

H

Häberlin, F., Surgical treatment of pulmonary tuberculosis, 99
Habit spasm, *see* Tic
Hadfield, G., on cardiac infarction due to premature senility, 189; on histology of the globus pallidus, 501
Hadfield, J. A., The reliability of infantile memories, 1259
Hæmangioma (J. J. M. Shaw), 69
Hæmatometra, three cases of, associated with tuberculosis, 82
Hæmatopan (Wolff), 428
Hæmoptysis in pulmonary tuberculosis, discussion on treatment of, 723; treatment of (L.A.), 1334
Hæmorrhage, combined concealed accidental and unavoidable, case of, 606; post-operative, 1174
Hæmorrhoids, internal, improved technique for treatment of by injection (Arthur S. Morley), 543; (C.), 1045
Hair in forensic medicine, 946
Hair-dye, injury caused by (M.L.), 255
Hale-White, Sir William, Materia Medica, Pharmacy, Pharmacology and Therapeutics, 19th ed. (R.), 398
Hall, Percy, Ultra-violet Rays in the Treatment and Cure of Disease, 3rd ed. (R.), 85
Hallilay, H., Chronic osteomyelitis in long bones, 490, 1054
Hallucinations, of (H. Mark Palmer), 1277; cutaneous and visual, in the chronic hallucinatory psychosis (E. D. Macnamara), 807; (C.), 885
Hambleden, Lord, death of, 1294
Hamer, Sir William, Address on voluntary hospitals and public authorities, 334; Chadwick lecture on history of epidemiology for the past hundred years, 1313
Hardy, T. L., Gastro-duodenal ulceration (C.), 834
Hare, W. T., on effects of middle-ear disease on efficiency in civil and military life, 813
Hare-lip, 1227
Harman, N. Bishop, Aids to Ophthalmology, 7th ed. (R.), 761
Harries, E. H. R., Prevention of diphtheria (C.), 106
Harrington, F., Some observations on asthma (C.), 672
Harris, I., Immortality (R.), 557
Harrison, L. W., on antenatal treatment of syphilis, 232
Harrogate water, copper as a constituent of, 1312
Hart, Bernard, on the ætiology of alcoholism, 704
Hartridge, H., Carbon monoxide gas poisoning, 1137, 1210
Harveian lecture on toxicology and its relation to medical practice (Sir W. Willcox), 603
Harvey, William (L.A.), 1023; 1031; as anatomist, an appreciation of (Sir A. Keith), 999; Bibliography of his works by Mr. G. Keynes, 795; eulogies in memory of, 1034
Harvey tercentenary banquet, 1036, 1090, 1158; the: celebrations by Royal College of Physicians, 621; (A.), 715; 982, 1031; demonstrations at, 1037; reception by the King, 1033
Harvey's book in English (A.), 1237
Hasson, James, Hydnocarpates and iodides in leprosy (C.), 158
Hastings, Sir Charles: Memorial lecture, 479
Hastings, Somerville, The future of medical practice in England, 67
Hay fever, a treatment for (C.), 1302
Hay, John, and Hunt, Elizabeth, A record of 50 consecutive cases of pregnancy and parturition in patients with crippled hearts, 271
Hayhurst, Emery R., Personal Health (R.), 400
Headache in children, treatment of (R. C. Lightwood) (M.T.T.), 770
Head injuries, treatment of (Hugh Cairns) (M.T.T.), 566, 617; sequels of, treatment of (Hugh Cairns and W. Russell Brain) (M.T.T.), 668
Heald, C. B., on abuses of ultra-violet light therapy, 392
Health and Exercise for Girls (Anne M. Robertson) (R.), 972; books on, for the lay public, 1364; education (A.), 766; the fundamentals of (A.), 615; the Game of (J. Maxwell Taylor) (R.), 482; Personal (Emery R. Hayhurst) (R.), 400; propaganda by pamphlets, 1158, 1209; resorts of France, tour to, 1205; statistics in Austria, 153, in Paris, 369, in Vienna, 467; and Cleanliness Council, meeting of, 582
Heaney, F. J. S., on a series of 183 consecutive cases of gastric and duodenal ulcers, 706
Heart and Athletics (Felix Deutsch and Emil Kauf) (R.), 556; and circulation, researches on the, 305
Heart disease, congenital, case presenting clinical picture of, with contrary pathological findings (Noel F. Pearson), 79; case studied over period of 12 years (Francis Bach), 1009; Growth of Our Knowledge of (R. O. Moon) (R.), 28
Heart-lung preparation: recent additions to our knowledge of the circulation (E. B. Verney), 1038
Hearts, crippled, a record of 50 consecutive cases of pregnancy and parturition in patients with (John Hay and Elizabeth Hunt), 271
Heath, Charles J., The conservative mastoid operation, 279; (C.), 470
Heating of buildings (A.), 511
Helminthic parasites and their hosts (A.), 197
Helminths, common, in medical practice, 481
Henry, Arnold K., Exposures of Long Bones and Other Surgical Methods (R.), 294
Henry, T. A., An Indian remedy against dysentery (C.), 108
Hepworth, F. A., on treatment of varicose veins by injection, 236
Herbalist, The Divine Origin of the Craft of the (Sir E. Wallis Budge) (R.), 659
Heresy, the evolution of a (L.A.), 1130
Hermes, or the Future of Chemistry (T. W. Jones) (R.), 862
Hernia, strangulated inguinal, case of in infant of 14 days (M. E. M. Jago), 444
Herrmann, George R., Clinical Case-taking (R.), 191
Hertslet, Lewis E., Solarium treatment in South Africa, 771
Herzfeld, Gertrude, Treatment of burns by tannic acid (C.), 519
Hesketh, Florence E., and Wertheimer, F. L., Significance of the Physical Constitution in Mental Disease (R.), 760
Hess, Julius H., Feeding and the Nutritional Disorders in Infancy and Childhood (R.), 137
Hiccup, discussion on, 604
Higgins, T. Twistington, on injection treatment of varicose ulcers, 1073
Highlands and Islands Medical Service, 1104
Hill, A. V., The Factors Governing Speed and Recovery from Fatigue (R.), 29; Living Machinery (R.), 240
Hill, Leonard, on use and abuse of ultra-violet light therapy, 392; and Campbell, J. Argyll, Observations on the preservation of life in shipwrecked individuals, 42
Hill, William, Operation for the alleviation of deafness (C.), 54
Hilliard, Cedric, Medical diathermy in middle-ear deafness (C.), 673
Hilliard, Curtis M., Text-book of Bacteriology and Its Applications (R.), 1180
Hilliard, Harvey, Medical perspective of multiple extractions and other major dental operations, 793, 895
Hip, signs by which to diagnose congenital dislocation of the (G. Perkins), 648
Hip-joint, *see under* Limp

His Majesty's Medical Household in Scotland, appointment to, 718
Hobhouse, E. W. Neill, Differentiations of hyperkinesis in children, 1112; Treatment of infantile cerebral palsies (M.T.T.), 409
Hodgkinson, death of Dr. Alexander, 146
Hodgson, Graham, on early diagnosis of cancer of rectum and colon, 1125
Hodsdon, Sir James (O.), 1154, 1203
Hodson, V. S., Treatment of the malarias (C.), 160
Hoff, Hans, and Schilder, Paul, Die Lagereflexe des Menschen (R.), 1285
Hogben, Lancelot T., The Comparative Physiology of Internal Secretion (R.), 191
Holgate, Surgeon-Lieut. D. W., award of gold medal to, 1309
Holland, Eardley, on anæsthesia in obstetrics, 498; on antenatal treatment of gonorrhœa, 757
Hollender, Abraham R., and Cottle, Maurice H., Physical Treatment in Diseases of the Eye, Ear, Nose, and Throat (R.), 293
Holloway Prison Hospital staff (P.I.), 473
Holman, C. C., Motor-car accidents and hospitals (C.), 371
Home, W. E., Commissions in the R.A.M.C. (C.), 108, 262; "The grateful republic" (C.), 987; Tubercle in the services, is there much? (C.), 1200
Honours, birthday (A.), 1183, 1239; New Year (A.), 35
Hookworm larvicide, a simple (A.), 822; (C.), 1043, 1251
Hopewell-Ash, E. L., on Middle Age and Keeping Young (R.), 400
Hop-pickers' camps: their supervision and sanitation, 879; (P.I.), 892
Horder, Sir Thomas, freedom of Salisbury for, 95
Hormone, the ovarian (E. C. Dodds), 1107
Hormones, action of, 49
Hospital and Charities Year-Book, 482; at £600 per bed, 907; ball, proceeds of a, 23; benefactor, a, 1206; contributory schemes, 516, 529, 732; coöperation, service (P.I.), 675; coördination in North Staffordshire, 1278; educational lectures, 634; for middle classes, 1303; funds, workpeople's, 516; law: liability for torts (J. E. Stone), 895; league, West Surrey, 971; million bequest to, 1308; a miners', 387; Organisation and Management, including Planning and Construction (Capt. J. E. Stone) (R.), 614; poor-law, the work of a (A.), 1293; problems, some (A.), 1335; Saving Association, finances of, 634, 727; service in America (A.), 868; staffs, immunisation of (L.A.), 611; system, our (Ernest W. Hey Groves), 251; voluntary, *see* Voluntary hospital

HOSPITALS.—Aberdeen Royal Infirmary, annual meeting, 393—Addenbrooke's Hospital, Cambridge, extension of, 1204—Ancoats Hospital, extension of, 680—Barnsley, Beckett Hospital, accidents, number of, treated, 425, extension of, 182, 425—Battersea General Hospital, renovation and re-opening, 1241—Becontree: King George's Hospital, scheme for, 504—Belfast Hospital for Sick Children, annual meeting, 424, new buildings for, 1312—Belgrave Hospital for Children, annual report, 1156, retiral of matron, 529—Bethlem Hospital, gifts to, 479—Birmingham Children's Hospital, annual meeting, 558—Birmingham Cripples' Hospital, enlargement of Woodlands Hospital, 1251—Birmingham Dental Hospital, annual report, 267—Birmingham General Hospital, annual report, 790—Birmingham and Midland Hospital for Skin and Urinary Diseases, annual report, 790—Bolingbroke Hospital, Wandsworth, average cost of in-patients at, 1051—Bradford Municipal Hospital, extension of, 76—Bradford Royal Infirmary, laying of memorial stones, 994—Brighton and Hove Dispensary and Hove Hospital, annual meeting, 423—Brighton Children's Hospital, royal visit to, 1196—Brighton, New Sussex Hospital, new wing opened, 790—Brighton, Royal Alexander Hospital for Sick Children, annual meeting, 790—Bristol General Hospital, opening of centre of cardiac research, 598—British Hospital for Mothers and Babies, Woolwich, no maternal death in last 1300 cases, 871—Bromley (Kent) Cottage Hospital, Diamond Jubilee Fund, 1210—Charing Cross Hospital, extension of, 805—City of London Hospital for Diseases of the Heart and Lungs, opening of new block, 1309—City of London Maternity Hospital, annual report, 680—Doncaster Royal Infirmary, extension of, 790, financial difficulties of, 238—Dundee Royal Infirmary, grant of £30,000 to, 190—East End Maternity Hospital, annual report, 1045—Eastbourne Royal Eye Hospital, extension of, 737—Edinburgh Royal Infirmary, report of, 368—Edinburgh Royal Maternity Hospital, work of, 368—Elizabeth Garrett Anderson Hospital, annual meeting, 625—Glasgow Dental Hospital, grants towards building fund, 353—Glasgow Royal Infirmary, annual report, 424—Glasgow Royal Maternity and Women's Hospital, annual report (A.), 91—Glasgow Victoria Infirmary, Fee-paying scheme, 413, 424—Glasgow Western Infirmary, annual report, 424—Govan, David Elder Infirmary, handed over to trustees of Glasgow Western Infirmary, 14—Hull Royal Infirmary, annual report, 943—Infants Hospital, Vincent-square, gift to, by Sir Gomer Berry, 1104, 1155—King Edward VII Hospital at Windsor, fire at, 943, 1195—King George's Hospital at Becontree, scheme for, 634—King's College Hospital, annual Court of Governors' meeting, 558, annual fête, 1309, finances of, 479—Lambeth General Lying-in Hospital, appeal for rebuilding of, 375—Lancashire Isolation Hospital, flood damage at, 110—Leamington, Warneford Hospital, orthopædic clinic for children under fourteen, 267—Leeds Infirmary, road accidents at, 680—Leeds Maternity Hospital, extension, 268—Leicester Royal Infirmary, grant of £10,000 to, 611—Liverpool Hospital for Cancer and Skin Diseases, reorganisation of, 207—Liverpool Hospital for Diseases of the Heart, opening of extension, 162—London Homœopathic Hospital, annual meeting, 680—London Hospital, appeal by Lord Knutsford, result of, 423, casualties and out-patients at the, 1256, quinquennial appeal, 582—London Jewish Hospital, opening of additions, 1156—London Lock Hospital, inquiry into management, 572—London: Margaret-street Hospital for Consumption, annual meeting, 418—Lord Mayor Treloar Cripples' Hospital, Alton, renovation of, 1328—Manchester Eye Hospital, paying patients at, 1007—Manchester Royal Infirmary, annual report, 286, finances of, 310, gift for new Nurses' Home, 479—Middlesex Cancer Hospital, annual report, 943—Middlesex Hospital, gift to rebuilding fund, 224, laying of foundation stone of new building, 1360, Samuel Augustine Courtauld Institute of Biochemistry, opening of, 1188, 1251—Mildmay Mission Hospital, opening of new wing, 1088—Moorfields Eye Hospital, annual report, 924—Newcastle-upon-Tyne Infirmary, gift of £50,000 to, 1051—Norfolk and Norwich Hospital, annual report, 805—North Staffordshire Royal Infirmary, workmen's contributions, 213—Peterborough and District Memorial New Hospital, opening of, 1315—Princess Louise Kensington Hospital for Children, opening of, 1106—Queen Charlotte's Maternity Hospital, annual meeting of Ladies' Association, 1241, response to special appeal, 50—Queen Mary's Hospital for the East End, opening of, 1050—Queen's Hospital for Children, annual meeting, 1146, annual report, 517, appeal for, 1307—Royal Berkshire Hospital, new operating theatres, at, 1051—Royal Free Hospital, annual report, 1199, centenary thanksgiving service, 318, finances of, 1199, hundredth annual meeting, 529, large donations to, 1188—Royal London Ophthalmic Hospital, Gifford Edmonds prize, offer of, 74—Royal National Orthopædic Hospital, annual meeting, 1104, festival dinner, 267—Royal Northern Hospital, progress of, 727—Royal Sussex County Hospital, annual meeting, 790—Royal West Sussex Hospital, annual meeting, 1051—St. Andrew's Hospital, Dollis Hill, annual report, 582—St. Bartholomew's Hospital, extension of, 50—St. George's Hospital, Hunterian celebration at (A.), 511—St. Mark's Hospital, annual meeting, 583—St. Mary's Hospital, Paddington, purchase of site for new medical school, 1315—Sheffield Royal Hospital, cost of maintenance at, 943—Shropshire Orthopædic Hospital, annual report, 893—Southwark General Lying-in Hospital, appeal for rebuilding, 312—Sunderland Infirmary, extension of, 516—Sussex Eye Hospital, annual meeting, 790—Sussex Maternity and Women's Hospital, annual meeting, 790—Sussex Throat and Ear Hospital, annual meeting, 790—Swindon Hospital, enlargement of, 1052—Teddington Memorial Hospital, laying of foundation stone, 624—Tidemills Marine Hospital, new wing, 1066—Tunbridge Wells and Counties General Hospital, centenary year of, 634—University College Hospital, annual general meeting, 737, appeal for, 634, new clinic for mental deficiency, &c., 214—Ventnor Hospital for Consumption, annual meeting, 1007—Victoria Park Hospital, new block, 1052—Wembley Hospital, opening of, 1202—West Bromwich, Hallam Hospital, transformation of, 778—West Middlesex Poor-law Hospital, extension of, 893—Westminster Hospital, hospital week, 1240—Westminster Ophthalmic Hospital, Royal, annual meeting of governors, 572, proposed rebuilding of, 292, removal of, 790—Wolverhampton and Staffordshire Hospital, fracture department at, 680—Woolwich War Memorial Hospital, appointments, 790—Workington Infirmary, workmen's contributions to, 545—Worthing Hospital, finances of, 790—York County Hospital, extension of, 1052

Hospitals and changing times, 423; and motor accidents, 286; (A.), 303; (C.), 313, 371; (P.I.), 1102; 1091; and traffic accidents, 1052; charters for, 1040; children's, 558; motorists and, 11; of London (A.), 408; organisation of (C.), 1106; rating of, 995; valuation of, 625; voluntary, present position of (C.), 53, 156, 208, 314, 372, 414, 416, 519, 626; 1192, revival of the (A.), 1184; women in the service of, 943
Hot-water bottle cover, the "Charlotte," 482
Hours Convention, Washington (A.), 767
Houses in unhealthy areas (P.I.), 1307; steel, 413
Housing conditons and infective disease (A.), 819; construction, Government subsidy and (P.I.), 1049; problem, the (P.I.), 1100
Howarth, resignation of Dr. W. J., 529; (O.), 1303
Hughes, Cecil, Frame for the Trendelenburg position (N.I.), 1332
Hulbert, Henry Louis Powell (O.), 941
Human Action, The Springs of (Mehrack Thompson) (R.), 915
Hume, E. E., Max von Pettenkofer: His Theory of the Ætiology of Cholera, Typhoid Fever, and other Intestinal Diseases (R.), 192
Hume, Joseph: an Indian medical officer of the past, 946
Humerus, transcondylar fractures of, in children (F. D. Saner), 698
Humidity and weaving (A.), 869
Humphreys, Mr. Justice, on criminal abortion, 551; on influence of parturition upon insanity and crime, 447
Humphris, Francis Howard, Artificial Sunlight and its Therapeutic Uses, 4th ed. (R.), 709; Note on the latest development of stereofluoroscopic work, 442, (C.), 673
Hungary, public health in, 1194
Hunt, Elizabeth, and Hay, John, a record of 50 consecutive cases of pregnancy and parturition in patients with crippled hearts, 271
Hunter, Donald, and Brain, W. Russell, "Encephalo-myelitis following vaccination" (C.), 1250
Hunter, John, bicentenary of birth of, 146; (L.A.), 345; experiments by: Evidence of an eye-witness, 359; Note on his cardiac infarct (John A. Ryle), 332
Hunterian bicentenary, celebration of, 306, 354, at St. George's (A.), 511, festival dinners, 367; lecture by E. Miles Atkinson, 483; oration by Dr. Howard Kelly, 134, Sir Holburt Waring, 323
Hunters and the Hamiltons: some unpublished letters, 354

Hunters, the homes of the (G. C. Peachey) (Thomas Vicary lecture), 360
Hunwicke, R. F., and Grinling, G. N., Note on some intestinal bacteria isolated from packed dates, 1071
Hurst, Arthur F., The Constitutional Factor in Disease (R.), 608; gastro-duodenal ulceration (C.), 469, 574; Treatment of ulcerative colitis (C.), 931
Hurst, Arthur F., Turner, Terence W., and Venables, John F., The early diagnosis of cancer of the colon and rectum, 1275
Hutchinson, R. C., and Stopford, J. S. B. Case of facial neuralgia associated with pulmonary abscess, 494
Hutchison, Robert, on chronic appendicitis in children, 444; on hiccup, 604; Psychological personality, 682
Hydnocarpus Wightiana oil, 791
Hydrocyanic acid as insecticide and raticide (A.), 1340
Hydrocyanic poisoning treatment of, 896
Hydrops tubæ profluens, case of, 82
Hygiene, International Office of (L.A.), 295; professé à l'Institut d'Hygiène de la Faculté de Médecine de Paris, Cours d'(Leon Bernard and others) (R.), 708; School Course in (Robert A. Lyster) (R.), 762
Hymans van der Bergh, A. A., On porphyrin in the mouth, 281
Hyperæmia in circumscribed regions, Dr. Doppler's method of producing, 467
Hyperkinesis in children, differentiation of (E. W. Neill Hobhouse), 1112
Hyperpiesis, Notes on the treatment of (William Bain), 389
Hyperproteinæmia, 1312
Hypoglycæmia in scleroderma (A.), 458

I

Ibotson, Edward C. B., Case resembling Addison's disease treated with pituitary extract, 79; Retinoscopy lamp, a cheap (C.), 482
Identification of babies in hospital (A., 666
Ileus following operations, treatment of (A. H. Southam) (M.T.T.), 41
Ilford, M.O.H.'s report, 725
Illegal operation: verdict of man-slaughter (M.L.), 255
Illumination of field in ophthalmic surgery, 968
Illuminators for operative radium work (A. B. and S. M. Smith) (N.I.), 1286
Immortality (I. Harris) (R.), 557
Immunisation of hospital staffs (L.A.), 611
Immunity and vitamin deficiency: review of the evidence, 670; comparative (A.), 977
Impotence, treatment of (Kenneth M. Walker) (M.T.T.), 250
Impulse, uncontrollable, 395
Income-tax allowances for replacing car, 62; the G.M.C. and (A.), 715; subtleties (M.L.), 1140; travelling expenses and (A.) 562
India, alcohol and drug revenue in (P.I.), 475; conditions of childbirth in (A.), 717

INDIA, CORRESPONDENCE FROM.—Bengal, sanitation in, 983—Far Eastern Bureau, the, 622—Health demonstration trains, 622—Longevity rate, improvement in, 983—Malaria and irrigation, 622, the burden of, 100—Maternity and child welfare, 983—Medical education, 622—Opium and Ayurveda, 623—Research in India, medical, 983, Institute, proposed central, 622—Scavenging and sewerage, 983—Simon Commission, the, 622—Tropical Medicine Congress in Calcutta, 100—Water-supplies, city, 622—Young, the late Colonel Cook, 623

India, export of opium from (P.I.), 473; opium cultivation in British (P.I.), 473
Indian medical officer of the past, an, 946; Medical Services, reorganisation of (A.), 1025; 1028; mines, employment of women in (P.I.), 632
Industrial accidents, treatment of, 497, prevention of, 161; activity and fatigue (A.), 1292; Medicine, Council of, meeting of, 497; Museum, Home Office, catalogue of, 667; output, influence of ultra-violet rays on (A. Lisle Punch, Russell Wilkinson, R. St. C. Brooke, and C. S. Myers), 1120; rheumatism, 497; (L.A.), 505
Industry, psychoneuroses and (L.A.), 242
Infant and Child Feeding (H. B. Wilcox): Vol. XII. of Haynes' Clinical Pediatrics (R.), 1230; life protection (M.L.), 1348; mortality and under-nourishment (P.I.), 630
Infantile memories, reliability of (J. A. Hadfield), 1259
Infantile mortality in the colonies (P.I.), 632
Infantile paralysis, artificial respiration in, 101
Infectious cases, diagnosis and removal of, responsibility of part-time M.O.H. for, 725; disease in England and Wales, weekly reports and statistics, 52, 103, 155, 213, 258, 312, 376, 418, 467, 518, 577, 624, 669, 726, 777, 832, 880, 944, 986, 1042, 1093, 1154, 1188, 1248, 1301, 1352; disease in schools (A.), 1339; Diseases and Aseptic Nursing Technique (D. L. Richardson) (R.), 114, notification of (P.I.), 676, Text-book of, Goodall and Washbourn's, 3rd ed. (rev. E. W. Goodall) (R.), 343
Influenza and genius (A.), 406; ear, the, 1177; on the protean nature of: report of a mild epidemic at sea (R. G. R. West), 337
Influenzal pneumonia or enterica (?) (C.), 371
Ing, H. R., and Twort, C. C., Mule-spinners' cancer and mineral oils, 752
Inhaler, an improved (C. W. Brook) (N.I.), 862
Inheritance in Man, Organic (F. A. E. Crew) (R.), 293
Innsbruck, Medical Faculty of, 266
Insane and mentally defective, present state of the care of the, 515
Insulin: can it save lives? (L.A.), 402; effect of prolonged use of, on subcutaneous tissues (R. D. Lawrence), 1328; in obliterative arteritis, 100; injections, local fat atrophy following (E. A. Carmichael and G. Graham), 601; (C.), 674; oral administration of (C.), 159; substitutes for, 99

INSURANCE ACTS, NATIONAL HEALTH.—Additional benefits (P.I.), 779, 1099, administraton of (P.I.), 1047, State grants for (P.I.), 1151—Aged Friendly Society members, medical benefit to (P.I.), 1255—Approved societies and additional benefits (P.I.), 631—Arrears, arrangements as to, 1360—Benefits, number of persons entitled to (P.I.) 1152—Certification difficulties (P.I.), 420, of insured persons in Ireland, 413, panel practitioners and (P.I.), 527—Charitable institutions, grants to, 781—Cost of National Insurance (P.I.), 474—Dental and ophthalmic benefit (P.I.), 1098, charges to approved societies (P.I.), 422, treatment (P.I.), 632—Dentist, free choice of (P.I.), 938—Deposit contributors (P.I.), 780—Doctors and dentists (P.I.), 780—Drugs and appliances, cost of (P.I.), 891, 992—Employment within the meaning of the Act (P.I.), 1098—Experimental clinics (P.I.), 1097—Ex-Service men and medical treatment (P.I.), 474—Family medical benefits (P.I.), 781—Fund, Insurance, drain on the, 571—Funds, National Health Insurance (P.I.), 373—Ireland, Northern, benefits in (P.I.), 1046—Lay control (P.I.), 783—Lost cards and eligibility for sickness benefit (P.I.), 892—Massage and electro-therapeutic treatment (P.I.), 892—Maternity service (P.I.), 781—Maternity benefit (P.I.), 1098—Medical benefit inquiry, a, 986, institutions (P.I.), 783—Mileage and drugs, insured persons and the cost of (P.I.), 784—Miner's medical aid societies (P.I.), 781—National Health Insurance Bill (P.I.), 523, 779; 567; (L.A.), 610; 831, 936, 991, 1046, 1150, 1254—Opticians. free choice of (P.I.), 784—Over-prescribing, case of alleged, 776; (C.), 836—Panel practice at Dundee, dissatisfaction with, 102—Prescriptions, official criticism of panel doctor's, 891—Provisional Regulations (P.I.), 992—Regional medical officers' fees (P.I.), 993—Scotland, health insurance in (P.I.), 472—Sickness benefit, increase in (P.I.), 782—Specialist benefit (P.I.), 782, 1151, and consultant service (P.I.), 1256—Surplus funds of approved societies (P.I.), 1047—Voluntary contributors (P.I.), 373, insurance under the Acts in Scotland, 368—Vote for (P.I.), 419—X ray examinations in cases of fracture (P.I.), 1047

Insurance against sickness, voluntary (L.A.), 817; life, in the tropics (A.), 299; sickness, 462
Internal Secretion, The Comparative Physiology of (Lancelot T. Hogben) (R.), 191
Intestinal tuberculosis, discussion on, 723
Intracranial endotheliomata, malignant (A.), 349; hæmorrhage from arterial malformation (Bruce Maclean), 1279, of the newborn (A.), 665
Intra-ocular hæmorrhages, recurrent, case of (Allister M. MacGillivray), 651
Intra-uterine death, causes of (A.), 302
Introcid (Hans Potratz), 270
Iodine in the prophylaxis of goitre (L.A.), 345; deficiency and goitre (A.), 667
Iraq, cholera in (A.), 404; factory inspection in (P.I.), 527
Ireland, cancer campaign in, 206, 310, 737

IRELAND, CORRESPONDENCE FROM.—Appointments Commission, work of the, 50, local, 1246—Belfast, maternity accommodation in, 206—Blackmail, charge of, against a medical man, 310—Cancer campaign in Ireland, 206, 310—Certificates, medical, and the School Attendance Act, 101—Certification of insured persons, 413—Cork, death of M.O.H. for city of, 882—Dentistry, practice of, by medical men, 465—Deputation to Minister for Local Government and Public Health, 413—Dinner of 83rd (Dublin) Hospital, 101—Lindsay, Prof. J. A., retirement of, 984—Lunacy in the Irish Free State, 206—McKisack Memorial Fund, 985, 1195—Meat inspection in Cork, 413—Medical Committee, Irish, work of the, 101—Public health work, debate on, in the Dail, 1195—Royal College of Surgeons, annual election, 1247—Vaccination, compulsory, the Dail and, 882, 1054

Ireland, Royal Medical Benevolent Fund of, annual meeting, 1309
Iridocyclitis with raised tension, causes and treatment of, discussion on, 967
Irish Free State, address to Governor-General of, 1360; lunacy in, 206; new Register, establishment of, 769; (A.), 1028
Irish Medical Association, annual meeting, 1309
Irish Medical Schools and Graduates' Association, jubilee banquet, 633
Irish milk-supply, 788
Irish Pharmacy Bill, proposed, 267
Irvine, L. C. Dundas, Note on treatment of toxic peri-arthritis, 963
Irving, John, The surgery of yesterday and to-morrow (C.), 1260
Italy, campaign against malaria in, 731; medical tour in, 1154

J

Jackson, Chevalier, Bronchoscopy and Esophagoscopy, 2nd ed. (R.), 861
Jago, Maurice E. M., Case of strangulated inguinal hernia in infant aged 14 days, 444
James, Edward, Passive immunisation against scarlet fever, 227
Jameson, Dr. W. W., appointed to Chair of Public Health, School of Hygiene and Tropical Medicine, 667
Jaundice due to movable kidney (A.), 1338; in Great Britain (L.A.), 1333; epidemic, in the Andaman Islands (H. C. Brown), 388, catarrhal, pathology of (E. Athole Ross), 599; (C.), 1095; from focal necrosis of liver, note on (C. E. Newman), 1012
Jaws, deformities of the (A.), 868
Jay, E. A. H., Present position of the voluntary hospitals (C.), 416
Jeans, Frank, on statistics, with some observations, 190
Jephcott, H., The vitamin D value of cod-liver oil (C.), 261
Jerusalem Academy of Medicine, 686
Jesse, F. Tennyson, Trial of S. H. Dougal (R.), 1180

Jessel, George, on the work and aims of tuberculosis care committees and kindred agencies, 233
Jewish children, myopia in (A.), 1083; hospital for Liverpool, 583
Jobson, T. B., New form of tonsil dissector (N.I.), 916
Johnson, A. H., Multiple dental extractions (C.), 931
Joly, J. Swift, Treatment of cancer of the bladder (M.T.T.), 1136
Jones, Archibald Mason (O.), 1355
Jones, H. Wallace, and Birch, C. Allan, Case of coronary occlusion following parturition, 27
Jones, Isaac, Fildes, Geoffrey, and MacLean, Hugh, Cure of gastric and duodenal ulcers by intensive alkaline treatment, 14 (C.), 157
Jones, Sir Robert, on operative treatment of recent fractures, 810
Jones, R. Watson, on the ritual of fracture reduction, 80
Jones, Dr. S. Lloyd, the late, 424
Jones, T. W., Hermes, or the Future of Chemistry (R.), 862
Jory, Philip, Treatment of minor degrees of nasal obstruction (M.T.T.), 146, 200
Journalistic centenary, a (A.), 664

JOURNALS (reviewed).—American Journal of Tuberculosis, 710, 916, 1022—British Journal of Children's Diseases, 138—British Journal of Ophthalmology, 660—Bulletin of the Ophthalmological Society of Egypt, 916—Fukuoka Acta Medica, 1022—Glasgow Medical Journal: Centenary number, 400, 452—Indian Journal of Medical Research, 710—Indian Physiologist, 916—Journal of Industrial Hygiene, 400, 504, 1128—Journal of Pathology and Bacteriology, 192, 815—Le Sang, Vol. I., 504—Medical Journal and Record, 1180—Narkose und Anæsthesie, 400—Nature, 915—Sind Medical Journal, 166—Zentralblatt für das Gebiet der inneren Sekretion und Konstitutionsforschung 1232

Journées Médicales de Bruxelles, 424, 789; d'Egypte, 303
Joynt, Richard Lane, New method of cutting large skin grafts (N.I.), 816; (O.), 836
Jury service, ordeals of (M.L.), 515

K

Kahn, R. L., on clinical aspects of the Kahn reaction, 971
Kauf, Emil, and Deutsch, Felix, Heart and Athletics (R.), 556
Keatinge, Henry Pottinger (O.), 1355
Keibel, Franz, on William Harvey, 1035
Keighley, the late Dr. J. W., 478
Keiller, William, Nerve Tracts of the Brain and Cord (R.), 1230
Keith, Sir Arthur, Appreciation of Harvey as anatomist, 999
Kelly, Howard A., and others, Gynæcology (R.), 1179
Kennedy, Alex. Mills, and Rogers, Lambert, Tumours of the Spinal Cord, 225
Kennedy, G. D., on three cases of puerperal hæmorrhage, 292
Kenya, medical and sanitary service in (P.I.), 527
Kerr, H., Disposal of the dead (C.), 418; Habitual offenders and the sale of food (C.), 1202
Kerr, James A., Case of spasmodic auricular fibrillation and bronchopneumonia complicating sepsis in the puerperium, 128
Khartoum, Wellcome research laboratories at (A.), 196
Kidd, Frank, Purpura of the urinary tract, 897
Kidd, Percy, Pulmonary atheroma (C.), 1045
Kidney, rôle of, in non-renal disorders, 911
Kienbock's disease (A.), 716
Kilner, Henry Goff (O.), 678
Kilner, T. Pomfret, on hare-lip, 1228
King Edward's Hospital Fund for London, 583, 680; annual meeting, 1086
King George's Hospital, Becontree, 504
Kingzett, C. T., An Epitomised Digest of Chemistry and its Industrial Applications, 4th ed. (R.), 607
Kinkead, Richard John (O.), 678
Kinnear, Sir Walter S., Cost to the country of industrial rheumatism, 1001
Kirschner, M., and Nordmann, O., Die Chirurgie, 21st instalment (R.), 815
Kisch, Harold, Aural systemic infection (C.), 55
Knee, glass fragments in, case of (A. H. Bizarro), 1011
Knowles, Robert, An Introduction to Medical Protozoology (R.), 398
Kolmer, John A., Principles and Practice of Chemotherapy (R.), 556
Korbsch, Roger, Lehrbuch und Atlas der Laparo- und Thorakoskopie (R.), 239
Kubányi, E., Die Bluttransfusion (R.), 399
Kuré, Ken, Pathogenesis of dystrophia musculorum progressiva, 441
Kyrle, Joseph, Histobiologie der Haut (R.), 1128

L

Laboratory Methods, Notes on Clinical (University of Glasgow Committee) (R.), 86
Labour, induction of, with animal bladders containing glycerine (G. F. Gibberd), 1325; subcutaneous emphysema complicating (M. Salmond), 757; (C.), 988, 1354; with complete occlusion of external os, case of (E. O. Croft and A. M. Claye), 231
Labyrinthitis, paraphenylene-diamine (E. Watson-Williams), 1123
Lacey, F. H., on antenatal treatment of gonorrhœa, 758
Lake, Richard, and Peters, E. A., Handbook of Diseases of the Ear, 5th ed. (R.), 451
Lamb, William, and Sydenham, Frederick W., Practical Guide to Diseases of the Throat, Nose and Ear, 5th ed. (R.), 84
Lander, C. L., Unusual case of inversion of uterus, 182
Lane, Clayton. Recent knowledge of hookworm disease (C.), 1301; a simple hookworm larvicide, 1043
Lane, S. A., Note on early diagnosis of primary perinephric suppuration, 1011
Lang, Basil Thorn (O.), 211
Lang, Warren H., New "loop tractor" for use in gastro-intestinal anastomosis (N.I.), 32
Lange, Fritz, and others, Das Münchener Sonderturnen und andere Wege zur Körperlichen Ertuchtigung (R.), 1331
Langmead, F. S., and Wilson, C. M., Liver treatment of pernicious anæmia, 874
La Rue, Daniel Wolford, Mental Hygiene (R.), 861
Larynx, Diseases of the (Harold Barwell), 3rd ed. (R.), 1076; intrinsic cancer of, operated through a laryngo-fissure, 1175; total extirpation of, for cancer, 207
Lawrence, R. D., Effect of prolonged use of insulin on the subcutaneous tissues, 1328
Lawrie, Macpherson, Nervous instability and the intake of sugar (C.), 158
Lazarus-Barlow, P., Effect of intravenous and intramuscular inoculations of novasurol in rabbits, 127
Lead, colloidal, 706; operations and injections of, in treatment of sarcoma of cheek (J. B. Oldham), 28
Lead-ethyl petrol, Committee of Inquiry on, 894, 1156
Lead poisoning from snuff, 585; murder by, 48
Lead shot in appendix (S. Gilbert Scott), 1122
Lead tetra-ethyl in motor spirit (P.I.), 524, 526, 527, 732, 894

LEADING ARTICLES.

Appendicitis in childhood, 453—Asphyxia, 1130
Bacteria, the names of, 661—Ballonius, the error of, 974—Basophilia, punctate, 818—Blood groups, inheritance of, 1182—Borderland of physiology and psychology, 1023—Brain, abscess of the, 506
Cancer Convention, International, 765—Carbon dioxide, medical uses of, 346—Cerebellar function, problems of, 88—Childbirth, painless, 559—Crime, the treatment of, 1129
Dead, disposal of the, 297—Deafness, the alleviation of, 241—Death certification, 139—Dental benefit, a year's experience of, 140—Diploma in midwifery and infant welfare, a higher, 1234—Distemper in ferrets, 918
Eclampsia, treatment of, 1289—Edinburgh Bill, the, 454—Empyema, the treatment of, 764—Encephalitis, later phases of, 1333—Epilepsy, 711—Eugenics and a national stock-taking, 401
Fibiger, Johannes, 243—Floods, the London, 90—Fœtal architecture, 296
Gastro-duodenal ulceration, 34—Glycosuria and heredity, 1077—Goitre, iodine in the prophylaxis of, 345
Hæmoptysis, treatment of, 1334—Harvey, William, 1023—Heat in the relief of pain, 507—Heresy, the evolution of a, 1130—Hunter, bicentenary of John, 345
Immunisation of hospital staffs, 611—Industrial rheumatism, 505—Insulin: can it save lives?, 402—International Office of Hygiene, 295
Jaundice, epidemic, in Great Britain, 1333
Liver in pernicious anæmia, 863
Malarias, treatment of the, 87—Malignant disease, prognosis in, 818, new growths, rarity of multiple primary, 917—Medical journal, a famous, 140—Mentally defective, case of the, 403—Milk and milk products, dietetic value of, 193
N.H.I. Amending Bill, 610—Negligence, a jury upon, 661—Nomenclature, 194
Optical Practitioners Bill, 89—Ovarian extract, clinical applications of, 1181
Pharmacopœia, the British, 1078—Physiological Society, the, 454—Physiology and psychology, borderland of, 1023—Protection, professional, 1233—Psychoneuroses and industry, 242—Public Health, a new chair of, 195—Puerperal infection, 33—Pulmonary atheroma, 974, fibrosis, 609—Purpura of the urinary tract, 917—Pylorus, the problem of the, 1288
Radiography, stereoscopic, 763—Radium for cancer, 973—Registration of medical students, 34—Respiratory diseases, prevalence of, 561—Reticulo-endothelial system, the, 763—Rheumatic diseases, the, 1024
School, health at: children, the medical care of, 1287, doctor and teacher, 242—Statistics, medical, 1233—Status lymphaticus, 1077—Sterilisation and mental disease, 864
Tonsillectomy and rheumatism, 713—Tuberculosis on Tyneside, 662
Ulcerative colitis, 865
Venereal disease treatment, legal compulsion in, 560—Voluntary insurance against sickness, 817
Welsh National School of Medicine, 1183—Willis, Sir Frederick, retirement of, 347—Women's work during the menstrual period, 712

League of Nations publications, 1014
Lebanon Hospital for Mental Diseases, 1050
Ledingham, J. C. G., Encephalomyelitis following vaccination (C.), 1301
Lee, Bolles, The Microtomist's Vade-Mecum, 9th ed. (R.), 972
Leeds School of Dentistry, opening of new school and hospital, 598
Lees, David, Campaign against venereal disease (C.), 1044; on vulvovaginitis, 291
Legal aid societies and the medical profession (C.), 1095
Leicestershire, M.O.H.'s report, 1300
Leishman, Sir William, memorial to, 1028
Leitch, Archibald, on syphilis in relation to ætiology and diagnosis of malignant disease, 1013
Leprosy, anæsthetic, two apparent recoveries from, following protein shock treatment (Philip Manson-Bahr), 1111; curative action of hydnocarpates and iodides in (Sir Leonard Rogers), 73, (James Hasson) (C.), 158; ephedrine in (A.), 1080; in Iceland, 792; in the Empire (P.I.), 475; in Palestine (P.I.), 1050; painless treatment of, 101
Levaditi, C., and Fournier, L., The value of bismuth therapy in syphilis, 692
Lewis, J. B. Strafford, Mental breakdown in adolescence (C.), 520, 575
Lewis, K., on work and aims of tuberculosis care committees and kindred agencies, 234

Lewis, Thomas, The Blood Vessels of the Human Skin and their Responses (R.), 1020, translated into German by Erich Schilf, 1128; and Dale, H. H., W. Harvey and the circulation of the blood, 1037
Lichen planus, treatment of (Arthur Whitfield) (M.T.T.), 352
Lichttherapie, Handbuch der (W. Hausmann and R. Volk, eds.) (R.), 451
Lightwood, R. C., Treatment of headache in children (M.T.T.), 770
Limp, the diagnosis of a, with special reference to the hip (H. A. T. Fairbank), 19
Linacre's influence on English medicine (Sir George Newman) (Linacre lecture), 947
Lindsay, D. M., on reduction of forceps delivery as basis for prophylactic gynæcology, 450
Lindsay, E. C., A further case of multiple pancreatic calculi, 700
Liners, German, medical staff on, 48
Liquor Bill (P.I.), 1357
Lister, Richard Francis (O.), 941
Lister, W. A., Case of pericardial knock associated with spontaneous pneumothorax, 1225
Lister Institute of Preventive Medicine, annual general meeting, 1140
Little, E. Graham, Has the campaign against venereal disease been a failure? (C.), 932; Present position of the voluntary hospital (C.), 156, 314, 416
Little, E. Muirhead, Treatment of commoner injuries of the carpus (M.T.T.), 870
Liver and liver extract, series of cases of secondary anæmia treated with (Janet Vaughan), 1063; and liver extracts in the treatment of pernicious anæmia (Stanley Davidson, J. G. McCrie, and G. Lovell Gulland), 847; cirrhosis of the (A.), 922; concentrated fluid extract of (Armour), 114; diet, recipes for, 113, 427; effect of anæsthetics on (A.), 769; extract for the treatment of pernicious anæmia (Med. Res. Council Rept.), 514; (A.), 564; feeding in multiple infective arthritis (Vincent Coates and J. L. Delicati), 1069; jaundice from focal necrosis of (C. E. Newman), 1012
Liver treatment of pernicious anæmia, 185; (C.), 674; (L.A.), 863; (C.), 933, 989; (A.), 1185; inquiry into results of, 872; leucocytic changes resulting from (L. E. H. Whitby), 285
Liverpool Ambulance Service, 1289; Jewish hospital for, 583
Living, the Rate of (Raymond Pearl) (R.), 1231
Living Machinery (A. V. Hill) (R.), 240
Livingstone College, Commemoration day celebrations, 1359; a year's work at, 114
Livingstone, J. L., Variations in the volume of the chest with changes of posture, 754
Llewellyn, Llewelyn Jones, Aspects of Rheumatism and Gout (R.), 191
Llewellyn-Jones, F., on drunkenness and civil and criminal responsibility, 235
Lloyd, Eric, on treatment of acute osteomyelitis, 500
Lloyd, V. E., Effect of acetylarsan in early syphilis, 1320
Lobeline, clinical value of, 757
Local authorities and sanitary science, 517
Lockhart-Mummery, J. P., Cancer of the rectum (C.), 262; Treatment of ulcerative colitis (C.), 1043
London and Counties Medical Protection Society, annual meeting, 1309
London, City of, M.O.H.'s report, 1153; The Earlier Inhabitants of (F. G. Parsons) (R.), 86; Fever Hospital in 1850, 270; Hospital Saturday Fund, 360, Sunday Fund, 318; hospitals of (A.), 408; Inter-Collegiate Scholarships Board, 1050; schools for mentally defective children (P.I.), 1049; street accidents in, 1309
Long, Harold O., a non-irritating silver-arsenic compound, 964
Longfield, death of Dep. Insp. Gen. William Digby, 1146
"Loop tractor" for use in gastro-intestinal anastomosis (Warren H. Lang) (N.I.), 32
Love, R. J. McNeill, and Christie, W. F., The surgical significance of corpulence, 1118
Low, G. Carmichael, Treatment of the malarias (C.), 259, 372
Lowe, T. Pagan, A treatment for hay fever (C.), 1302
Lumleian lectures, 566; on epilepsy (James Collier), 587, 642, 687
Lumsden, Thomas, Specificity of anti-cancer sera (C.), 260
Lunacy administration (P.I.), 580; certification of (A.), 1027; statistics, criminal (M.L.), 930
Lung, abscess of, empyema and (A.), 1336; tumours of the (A.), 977
Lupus and its treatment, discussion on, 721; facial (C.), 158; vulgaris, a method of treating (A. R. Somerford), 1173
Lyall, Alexander, on basal metabolism in clinical medicine, 814
Lymph, production of Government (P.I.), 1151
Lymphadenoma with recurring pyrexia (A.), 1027
Lyster, Robert A., School Course in Hygiene (R.), 762

M

McArdle, John Stephen (O.), 836
Macaskie, James G., Puerperal sepsis (C.), 520
McAuliffe, George Birmingham, Essentials of Otology (R.), 914; Sound-deadened rooms in the treatment of aural inflammations (C.), 1145
McCandlish, the late Dr. J. G., 23
McCann, F. J., on the influence of parturition upon insanity and crime, 447; an operation for prolapse of rectum in the female, 1072
McCartney, J. E., on the carrier problem, 553; Hideyo Noguchi (C.), 1144
McCaw, John, Aids to the Diagnosis and Treatment of Diseases in Children, 6th ed. (R.), 137
McClean, D., An attempt to control an epidemic of measles, 548
McCowan, P. K., and Cook, L. C., The mental aspect of chronic epidemic encephalitis, 1316
McCrie, J. G., Gulland, G. Lovell, and Davidson, Stanley, Treatment of pernicious anæmia with liver and liver extracts, 847
Macdonald, G., on the potentially tuberculous child, 722
Macdonald, Dr. James Alexander, death of, 870; (O.) 940
MacDougall, John Aymers (O.), 1305
MacDowall, R. J. S., Edr., Mind (R.), 1330
McFadyean, Kenneth, Treatment of primary or essential marasmus by ostelin, 181
McFarland, B. L., Prognostic tests in tuberculosis, 804
MacGillivray, Allister M., A case of "Eales's disease" (recurrent intra-ocular hæmorrhages), 561
McGowan, J. P., on aplastic anæmia, 1123
MacGregor, Malcolm E., Mosquito Surveys (R.) 136
McIlroy, A. Louise, on dysmenorrhœa from calcification of ovary, 1282; Influence of parturition upon insanity and crime, 379; on treatment of gonorrhœa in pregnancy and the puerperium, 502
McIntosh, James, and Turnbull, H. M., Encephalo-myelitis following vaccination (C.), 1094
Mackay, Helen M. M., Treatment of rickets (M.T.T.), 923, 979
Mackay, W., A case of rheumatic fever with myelocytic leucocytosis, 702
Mackee, George M., X Ray and Radium in the Treatment of Diseases of the Skin, 2nd ed. (R.), 136
McKenzie, Dan, Diseases of the Throat, Nose, and Ear, 2nd ed. (R.), 84; The Infancy of Medicine (R.), 238; Medical diathermy in chronic middle-ear deafness, 597; (C.), 673
Mackenzie, J. Ross, Carbon dioxide in anæsthesia (C.), 471
MacKinnon, R. R. S., Case of epilepsy cured by ovariectomy, 910
McKisack, Henry Lawrence (O.), 736
McLaughlin, A. I. G., Mechanism and elements of pleural pain, 489
Maclean, Bruce, Case of intracranial hæmorrhage from arterial malformation, 1279
MacLean, Hugh, Jones, Isaac, and Fildes, Geoffrey, Cure of gastric and duodenal ulcers by intensive alkaline treatment, 14, (C.), 157
Maclean, Kenneth Alexander (O.), 1257
Macleod, Dr. J. J. R., appointed to Chair of Physiology in Aberdeen, 823
McMullen, W. H., on causes and treatment of iridocyclitis, 967
Macnamara, E. D., Note on cutaneous and visual hallucinations, 807; Women medical students in London (C.), 728
Macnaughton-Jones, H., Nasal obstruction as a cause of deafness (C.), 728, 835
Macpherson, Sir John, on the new psychiatry, 1074
McSweeney, C. J., Acute rheumatism in childhood, 959
Magnolax Brand (Wampole), 534
Maher, Maj.-Gen. Sir James, death of, 103
Mahony, Michael Joseph (O.), 57
Maingot, Rodney, and Carlton, C. Hope, Injection treatment of varicose veins, 806, (C.), 1045
Majorca as a health resort (C.), 534
Malaria and irrigation in India, 622; burden of, in India, 100; Commission of League of Nations, study recommendations of, 769; effects of plasmochin and "plasmochin-compound" on gametocytes of benign tertian and subtertian (P. H. Manson-Bahr), 25; in the Dutch East Indies (A.), 718; in Italy, campaign against, 731; paralysis cured by: first known case—1850 (E. W. Gudger), 585
Malariatherapie der Syphilis, Die (Josef Matuschka and Rudolf Rosner) (R.), 344
Malarias, treatment of the (L.A.), 87; (C.), 160, 259, 316, 372
Malaya British, hygiene and sanitation in, 1054
Malignant disease, antimony and ipecacuanha in, 1311; prognosis in (L.A.), 818; The Surgical Treatment of (Sir H. J. Waring) (R.), 607; new growths, innervation of (A.), 613, multiple primary, rarity of (L.A.), 917; (C.), 1200; tumours, infective origin of, 1088
Mal-occluded teeth, treatment of (A)., 349
Manchester, cancer campaign in, 585; hospital service, cost of, 11; sunshine in, 1051; Tuberculosis Dispensary, transference of, 789; and District Radium Institute: annual report, 907
Manipulation, Treatment by (A. G. Timbrell Fisher), 2nd ed. of "Manipulative Surgery" (R.), 762
Mann, Ida C., Development of the Human Eye (R.), 1229
Manson-Bahr, P. H., Further observations on effects of plasmochin and "plasmochin-compound" on gametocytes of benign tertian and subtertian malaria, 25; treatment of the malarias (C.), 160, 316; Two apparent recoveries from anæsthetic leprosy following protein shock treatment, 1111
Mantell, Gideon Algernon (Sidney Spokes) (R.), 761
Mapother, E., on the ætiology of alcoholism, 705
Marasmus, primary or essential, treatment of, by ostelin (Kenneth McFadyean), 181
Marrack, J. R., and Panton, P. N., Clinical Pathology, 2nd ed. (R.), 760
Marian, Charles, and Randle, Alan, Two cases of typhus of anomalous type, 1224
Marie, Pierre, Travaux et Mémoires, Tome 2me (R.), 1285
Marshall, George Balfour (O.), 316
Maryland, early medicine at, 113
Mason, death of Mr. Dan, 1206
Mason, the late Dr. William Inglis, 424
Massingham, R., Prevention of diphtheria (C.), 416
Mastoid operation, the conservative (Charles J. Heath), 279
Mastoid operations (C.), 417, 470
Materia Medica, Pharmacy, Pharmacology and Therapeutics (Sir William Hale-White), 19th ed. (R.), 398
Maternal mortality, 534, 893; (P.I.), 631, 1049; (A.), 1187; in Canada (A.), 819; in hospital, 871; in Kensington and Southwark (P.I.), 1256; investigation of (C.), 885; the milk-supply and (P.I.), 1101
Maternity hospital, septic infection in a (A.), 1132
Maternity and Child Welfare Centres, supply of milk at (P.I.), 1152
Matuschka, Joseph, and Rosner, Rudolf, Die Malariatherapie der Syphilis (R.), 344
Maude, A., the disposition of medical libraries (C.), 209
Maxima charta (A.), 716
May, Percival M., Hygiene at the Royal Hospital School, Greenwich (C.), 673

Mayer, Otto, on pathology of otosclerosis, 1176
Mayo, Herbert R., and Ellis, Edward A., Case of traumatic pancreatitis, 495
Measles, an attempt to control an epidemic of (D. McClean), 548 ; diagnosis of, by ultra-violet light (A.), 1239 ; early diagnosis and care of (A.), 663 ; reducing mortality from, 671 ; serum, convalescent (C.), 786
Meat, diseased, penalties for sale of (M.L.), 205 ; unsound, exposed for sale (M.L.), 411
Medical adviser to Edinburgh Corporation, 773 ; and Dental Defence Union of Scotland, 1051, registers (A.), 510 ; Annual for 1928 (R.), 1021 ; cruise, a, 507 ; diary, 58, 111, 162, 214, 268, 319, 376, 425, 479, 530, 581, 634, 680, 738, 790, 839, 894, 944, 996, 1052, 1104, 1156, 1206, 1258, 1309, 1361 ; education (A.), 510 ; examination, periodic (A.), 347 ; Golfing Society, 680, 1360 ; History, the Peaks of (C. L. Dana), 2nd ed. (R.), 915 ; Insurance Agency twenty-first anniversary, 1205 ; journal, a famous (L.A.), 140 ; Jurisprudence, Taylor's, 8th ed. (ed. S. Smith and W. G. H. Cook) (R.), 1126 ; libraries, the disposition of (C.), 209 ; movies (A.), 921 ; news, 57, 110, 161, 214, 266, 317, 374, 424, 478, 529, 582, 633, 679, 737, 789, 838, 892, 942, 995, 1050, 1105, 1155, 1205, 1257, 1308, 1359 ; officers of health, reports, 725, 777, 832, 1092, 1153, 1299, 1350, reports, brief survey of for 1926, 51 ; practice in England, the future of (Somerville Hastings), 67 ; (C.), 208, 264, in S. Africa, 464, the trend of (A.), 1237 ; practitioner in relation to the administration of justice, 183 ; Register, Irish, 769 ; Research, the tale of (A.), 1337, Council : annual report, 305, 618 ; saints, 132 ; Science for Everyday Use (Shields Warren) (R.), 399 ; soldier, a, 1210 ; student, an American, in 1790 (A.), 563, Diary of a, during the mid-Victorian Period (Shephard T. Taylor) (R.), 504 ; Women's International Association, meeting at Bologna, 634, 893

MEDICINE AND THE LAW.—Appeal, Dr. Alcock's unsuccessful, 620—Barber's shop, hygiene in, 514—Borax poisoning, death from, 255—Chemist's qualification, forged certificate of, 1196, successful appeal, 571—Conveniences, public, at railway stations, 102—Coroner and medical practitioner, 985, and medical status, 880—Coroners Acts, criticism of, 1196—Criminal lunacy statistics, 930—Cruelty to animals, charge of : successful appeal, 206—Dairyman imprisoned, 1140—Dangerous Drugs Act prosecution fails, 1296, fishing vessels and, 152, register, 621—Death certification by unregistered doctor, 1087—De Freville, Mrs., action by, 411—Dental Register, removal of name from, 1040—Drunk or not drunk, 930—Drugs, noxious, clergyman's mail order business in, 412—Encephalitis lethargica, 514—Escape from asylum, 1088—Factory Acts, a gap in the, 205—False description as B.Sc., 985—Hair-dye, injury caused by, 255—Health or justice ?, 256—Illegal operation : verdict of manslaughter, 255—Income-tax subtleties, 1140—Infant life protection, 1348 — Insurance, non-disclosure of, to juries, 930—Jury service, ordeals of, 515—Loyalties, a dilemma in, 370—Meat, diseased, penalties for sale of, 205, unsound, exposed for sale, 411—Milk frauds and habitual offenders, 1140, 1196 ; (C.), 1201, pasteurised, 255—Motoring offences, a legal view of, 411—Neglect of health, criminal, 101—Negligence, charge of, against a mental hospital, 411—Patent rights in therapeutic manufactures : the need of novelty, 620—Penalty, a ridiculous, 308—Promise to marry, effect of illness upon, 985—River pollution and sugar-beat effluent, 308—Road, the un-open, 52—Secrecy, professional, 308—Spinners' cancer, 308—Tuberculosis, alleged delay in notifying, 1040—Vaccination, death after, 570—Vitamin-content of cod-liver oil tablets, 787

Medicine and the Man (Millais Culpin) (R.), 608 ; early, at Maryland, 113 ; The Infancy of (Dan McKenzie) (R.), 238 ; Internal : Lehrbuch der speziellen Pathologie und Therapie der inneren krankheiten (A. Strümpell), 26th ed. (R.), 137 ; Recent Advances in (G. E. Beaumont and E. C. Dodds), 4th ed. (R.), 814
Medico-Legal Institute, a central, 1360 ; research (C.), 1145
Megaw, Lieut.-Colonel J. W. D., retirement of, from editorship of "Indian Medical Gazette," 1156
Meinicke micro-reaction, the (D. Prentice), 493 ; (A.), 510 ; (C.), 989
Melbourne hospitals, 633
Memorials to medical men : Sir David Ferrier (A.), 1238—Dr. Iris Fox (C.), 1303—Dr. W. F. France, 737—Dr. H. L. McKisack, 985, 1195—Sir Dawson Williams, 510, 558, 1189, 1294
Meningitis, traumatic, treatment of, 1088
Menstrual life, early, treatment of disturbances incidental to (Alice E. Sanderson Clow) (M.T.T.), 460 ; period, women's work during (L.A.), 712
Menstruation and thyroid function (A.), 92
Mental breakdown in adolescence (A.), 407 ; (C.), 520 ; defectives in Essex, 1364 ; disabilities and premature birth (A.), 244 ; Disease, Significance of the Physical Constitution in (F. L. Wertheimer and Florence E. Hesketh) (R.), 760, somatic changes in (A.), 146, sterilisation in (L.A.), 864 ; Energy, Directing (F. A. P. Aveling) (R.), 1330 ; Hygiene (D. W. La Rue) (R.), 861
Mental Hospital Reports : Aberdeen and Glengall Mental Hospital, 576—Aberdeen Royal Mental Hospital finances, 393—Cheshire County Mental Hospital, 1248—Cumberland and Westmorland Mental Hospital, 1248—East Sussex County Mental Hospital at Hellingly, 726—Glasgow Royal Asylum, 1248—Hampshire Mental Hospitals at Knowle and Park Prewett, 726—Inverness District Asylum, 577—Lancashire and Cheshire Society for the Permanent Care of the Feeble-minded, 727—Lancaster, Royal Albert Institution, 727—Larbert Mental Hospital, 576—Lincoln, The Lawn, 1248—Middlesbrough Borough Mental Hospital, 1248—Roxburgh District, 576—Royal Edinburgh Hospital for Mental and Nervous Disorders, 545—Wilts County Mental Hospital, 726
Mental Welfare, Central Association for, course for teachers at, 162, 1308
Mentally defective, case of the (L.A.), 403 ; Institutions for the, reports of, 727 ; children, the fate of (A.), 90, contributory pensions and (P.I.), 1306, London hospitals for (P.I.), 1049
Merchant ships, fresh water on (P.I.), 1359
Mercurochrome intravenously (C.), 209
Mercury as a diuretic (A.), 867
Metabolism, basal, in clinical medicine, 814 ; in Health and Disease (Eugene F. Dubois), 2nd ed. (R.), 85 ; portable apparatus for estimation of (A.), 145
Métabolisme basal, Le : Les applications en clinique (Claude Gautier and René Wolff) (R.), 85
"Metalix" X ray tubes, 427
Methylated spirit drinking in Scotland (P.I.), 527
Metropolitan Asylums Board, appointments, 1203
Meyer-Steineg, Theodore, Treatment of gunshot wounds, and its improvement by A. Paré, 840, 896
Micrococcus melitensis, agglutination of (C.), 418
Microscope, a satisfactory, 636
Microtomist's Vade-Mecum, Bolles Lee's, 9th ed. (R.), 972
Middle Age and Keeping Young, On (E. L. Hopewell-Ash) (R.), 400
Middle-aged sprinting, 428
Middle-ear disease, effects of, on efficiency in civil and military life, discussion on, 812 ; (A.), 822
Middleton, George Stevenson, death of, 667 ; (O.), 735
Midwifery, History of British, from 1650 to 1800 : FitzPatrick Lectures (Herbert Spencer) (R.), 29 ; and infant welfare, a higher diploma in (L.A.), 1234
Midwives, position of, in America, 49 ; training and employment of, 1104
Military hospitals (P.I.), 473, 527
Milk, adulteration of (P.I.), 1202 ; and milk products, dietetic value of (L.A.), 193 ; Certified, 724 ; classification of (P.I.), 994 ; consumption and the growth of small children (J. B. Orr), 202, stimulation of (P.I.), 374 ; frauds and habitual offenders (M.L.), 1196 ; Grade A, prescriptive standard of (P.I.), 1152 ; pasteurised (M.L.), 255 ; production (P.I.), 526 ; supply, Irish, 788 ; tinned, production of, on the Continent (P.I.), 422 ; yield of the Friesian cow, 730
Millennium, a medical (A.), 564
Miller, A. A., Injection treatment of varicose veins (C.), 934
Miller, Alexander Cameron (O.), 110
Miller, H. Crichton, on the ætiology of alcoholism, 705
Miller, Reginald, Influence of environment on rheumatic infection in childhood, 1005 ; on some public health aspects of juvenile rheumatism, 446
Milligan, Robert Arthur (O.), 265
Milligan, Sir William, An operation for the alleviation of deafness (C.), 109
Mind (R. J. S. McDowall and others) (R.), 1330
Miners' accident-rate, 1051 ; and silicosis (P.I.), 1202 ; hospital, a, 387 ; phthisis (A.), 768 ; (P.I.), 993
Minerva (A.), 1186
Mines, night work by youths in (P.I.), 526
Mining areas, distress in (P.I.), 675
Ministry of Health appointments, 893, 1051, 1258, 1308
Ministry of Health Vote (P.I.), 1048, 1100
Minor Surgery and Bandaging (Gwynne Williams), 19th ed. (R.), 1022
Minot-Murphy treatment, *see* Liver treatment
Mitchell, Alexander, on treatment of acute osteomyelitis, 499
Molecular Physics and the Electrical Theory of Matter (J. A. Crowther), 4th ed. (R.), 862
Mollison, W. M., on dysphagia due to pharyngeal paralysis, 1174
Moncrieff, Alan, Gastro-duodenal ulceration (C.), 104, 210
Moneylending, the Law of (Linton Thorp and A. Aiken Watson) (R.), 710
Monmouthshire, health conditions in (P.I.), 420
Monsarrat, K. W., on surgical treatment of diverticulitis, 396
Montpellier midwifery, marvellous (C.), 1250, 1364
Moon, R. O., Growth of Our Knowledge of Heart Disease (R.), 28
Moore, Dr. Charles Gordon, appointed Physician in Ordinary to Princess Beatrice, 1309
Moore, Henry, Auricular flutter, 795 ; Liver treatment of pernicious anæmia, 878
More, Lieut.-Colonel Paxton St. Clair (O.), 161
Morey, G. W., Modified forceps and retractor (N.I.), 1226
Morgan, J. Gwynne, and Amor, Arthur J., Case of electrocution with notes on clinical value of lobeline, 756
Morley, Arthur S., An improved technique for the treatment of internal hæmorrhoids by injection, 543
Morphine, League of Nations and world output of (P.I.), 993 ; sublingual absorption of (A.), 820 ; (C.), 885
Morphy, Owen, on the pulpless tooth, 654
Morrin, Mr. F. J., French honour for, 1203
Morris, Thomas Henry, death of, 391
Morse, Nathan Clark, Emergencies of a General Practice, 2nd ed. (R.), 135
Mort, Spencer, Present position of the voluntary hospital (C.), 53 ; Radium treatment of cancer (C.), 1146
Mortimer, J. D., Operations on the enlarged prostate (C.), 209
Morton, W. Cuthbert, Anatomical nomenclature (C.), 988
Mosquito larvicide, borax as a (A.), 767 ; problem in South Africa, 775 ; Reduction and Malaria Prevention (J. A. Crawford and B. S. Chalam), 2nd ed. (R.), 915 ; Surveys : A Handbook for Anti-Malarial and Anti-Mosquito Workers (Malcolm E. MacGregor) (R.), 136
Mosquito-proofing in India (A.), 922
Mother, Advice to the Expectant, on the Care of Her Health (F. J. Browne), 2nd ed. (R.), 503
Mothers and Fathers, To (R.), 1106
Motor-car accidents and hospitals (A.), 303 ; (C.), 313, 371 ; 516 ; (P.I.), 1102
Motor clubs' insurance scheme, 318 ; exhausts, carbon monoxide from (A.), 1081 ; spirit, lead tetra-ethyl in (P.I.), 524, 526, 527, 732, 894, Committee of Inquiry on, 894, 1156 ; tax, petition against (P.I.), 675
Motoring offences, legal view of (M.L.), 411
Motorists and hospitals, 11, 286

Mott memorial, the (A.), 351; volume, 1051
Mouse sarcoma, destruction of, by high-frequency currents, 1143
Moynihan, Sir Berkeley, Surgery of yesterday and to-morrow, 1207
Muir, J. C., The present position of the voluntary hospital (C.), 208, 372
Muir-Smith, death of Dr. William, 680
Mule-spinners' cancer and mineral oils (C. C. Twort and H. R. Ing), 752
Müller, W., Die Chirurgie (Kirschner and Nordmann), 21st instalment, on Surgery of Muscles, Tendons, and Fasciæ (R.), 815
Mullock, Richard Wilson (O.), 736
Mumford, Alfred, Healthy Growth (R.), 708
Mumps, polyneuritis complicating, 998
Münchener Medizinische Wochenschrift, 75th birthday of (L.A.), 140
Munro, W. T., and Griffith, A. Stanley, Bovine type tubercle bacilli in sputum from pulmonary tuberculosis, 384
Murtz, A. P., Sublingual absorption of morphine (C.), 885
Muscles, Tendons, and Fasciæ, Surgery of: Vol. II. of Die Chirurgie (edited by M. Kirschner and O. Nordmann) (R.), 815
Muscular Movement: The Factors Governing Speed and the Recovery from Fatigue (A. V. Hill) (R.), 29
Muskens, L. J. J., Epilepsy (R.), 1284
Muthu, David C., Pulmonary Tuberculosis: its Etiology and Treatment, 2nd ed. (R.), 29; (C.), 521
Myers, C. S., Punch, A. Lisle, Wilkinson, Russell, and Brooke, R. St. C., Influence of ultra-violet rays on industrial output, 1120
Myers, J. Arthur, Modern Aspects of Diagnosis, Classification, and Treatment of Tuberculosis (R.), 1126
Myopia in childhood, 1014; in Jewish children (A.), 1083

N

Nabarro, David, on the antenatal treatment of syphilis, 232
Naidu, A. Srinivasulu, A case of sarcosporidiosis, 549
Narcolepsy, discussion on, 550
Narcotic drugs, 775
Nasal Neurology, Headaches, and Eye Disorders (Greenfield Sluder) (R.), 30; obstruction as a cause of deafness (C.), 728, 786, 835, treatment of minor degrees of (Philip Jory) (M.T.T.), 146, 200
Naso-oral sepsis, influence of, on lungs and gastro-intestinal tract, discussion on, 130
Nasopharyngeal epidemics in public schools, 1329
National Association for the Prevention of Tuberculosis, handbook of schemes, 667
National Baby Week Council, 585; work of the, 943, 1103, 1309
National Children's Home and Orphanage, story of, 378
National Institute of Industrial Psychology, gift to, 425
National Physical Laboratory, 1040
National Union of Societies for Equal Citizenship, 1051
Naval hospitals (P.I.), 527; beds in (P.I.), 473, Portsmouth (P.I.), 422; invaliding (C.), 787; (P.I.), 423, 578, 630, 674, 1151, 1307; Medical Compassionate Fund, 267, 1029; recruits, disabilities of (P.I.), 632
Navy, dental officers in the, 680; epidemiology of typhoid fever in the, 393; health of the, in 1925 (A.), 298; invalidings from the (P.I.), 423, 578, 630, for tuberculosis (P.I.), 674; (C.), 987
Negligence, charge of, against mental hospital (M.L.), 411; a jury upon (L.A.), 661
Negro community in America, vital statistics of, 623
Negroes, vital capacity of, 1363
Neilson, D. F. A., and Romanis, W. H. C., Transpleural exploration of the œsophagus, 386
Neligan, A. R., Rhazes and Avicenna (C.), 1145
Neonatal mortality, reduction of, 1103
Nephritis, some problems of (T. Izod Bennett) (Goulstonian lectures), 535, 637, 741
Nerve palsy, a case of (Nathan Walsh), 129; Tracts of the Brain and Cord (William Keiller) (R.), 1230
Nervous instability and the intake of sugar (C.), 158; System, Central, Examination of the (Donald Core) (R.), 861, Pathology of: Pathologie du Système Nerveux (various authors) (R.), 972
Nesfield, V., Operation for the alleviation of deafness (C.), 54
Neuralgia, facial, associated with pulmonary abscess, case of (R. C. Hutchinson and J. S. B. Stopford), 494
Neurologie: Praktische Differentialdiagnostik für Ärtze und Studierende (W. Unger) (R.), 1021
Neurology, Text-book of Clinical (Israel S. Wechsler) (R.), 914
Newborn, intracranial hæmorrhage of the (A.), 665; the so-called pemphigus of the (A.), 458

NEW INVENTIONS.—Carbonic acid snow applicator (T. B. Sellors), 496—Drainage-tubing, a new (H. H. Greenwood), 1286—Electro-medical apparatus, Arnberg's, 862—Forceps and retractor, modified (G. W. Morey), 1226—Illuminators for operative radium work (A. B. and S. M. Smith), 1286—Inhaler, an improved (Charles W. Brook), 862—"Loop tractor" for use in gastro-intestinal anastomosis, new (Warren H. Lang), 32—Skin-grafts, large, new method of cutting (R. Lane Joynt), 816—Syringe for treatment of varicose veins (K. M. and C. J. Celian-Jones), 1022—Tonsil dissector, new form of (T. B. Jobson), 916—Trendelenburg position, frame for the (Cecil Hughes), 1332—Trial frame, new form of (John Parry Price), 344

NEW PREPARATIONS.—Antipneumococcus serum: Type I., 166—*B. acidophilus* emulsion, 322—Bismogenol, 166—Calcium "Sandoz," 791—Caprokol, 740—Cerevisiæ Compound, 270—Dextrocid, 270—Dimol Catarrh Snuff, 740—Felsol, 534—Hæmatopan, 428—Hydnocarpus Wightiana oil, 791—Introcid, 270—Magnolax Brand, 534—New-Promonta, 322—Pancrobilin pills, 114—Peptenzyme, 428—Plasmoquine, 482—Pluriglandular compounds, 322—Prokliman, 114—Protonuclein, 114—Radiostol, 428—Radiostoleum, 740—Schultz-Charlton test solution, 270—Sedoval, Elixir, 114, 322—Sulphostab, 322—Synthalin, 482—Tessol, 791—Tricalcine, 428

New-Promonta (Promonta Co., Ltd.), 322
New South Wales, lunacy law of (A.), 1082; notification of venereal disease in (A.), 1135
New Year honours (A.), 35, 166
New Zealand, church hospital in, 893
Newman, C. E., Note on jaundice from focal necrosis of liver, 1012
Newman, Sir George, Linacre's influence on English medicine (Linacre lecture), 947; on rheumatism, 981
Newspaper insurance from a medico-legal point of view (C.), 574
Nicholas, S. D., and Cooper, E. Ashley, Aids to Biochemistry (R.), 31
Nicholls, Lucius, Agglutination of *Micrococcus melitensis* (C.), 418
Nichols prize, award of, 718
Nicholson, the late Dr. T. D., 1000
Night terrors, a note on (J. W. Shackle), 287
Night work by youths in mines (P.I.), 526
Nisot, Marie Thérèse, La Question Eugénique dans les divers Pays, Vol. I. (R.), 1231
Nitrous oxide, discovery of anæsthetic powers of (George Parker), 60
Nobel, E., Pirquet, C., and Wagner, R., Die Ernährung gesunder und kranker kinder, 2nd ed. (R.), 1231
Nocht, Prof. Bernard, seventieth birthday commemoration volume (A.), 197
Noguchi, Hideyo (A.), 1083; (C.), 1144
Noise, motorists and excessive (P.I.), 1255
Nomenclature (L.A.), 194; (C.), 156, 264; anatomical (C.), 988; (A.), 1081; (C.), 1355
Norbury, Lionel, on treatment of ulcerative colitis, 858
Nordmann, O., and Kirschner, M., Die Chirurgie, 21st instalment (R.), 815
Northampton, M.O.H.'s report, 1300
Nose, Throat, and Ear, Diseases of the (A. Logan Turner ed.), 2nd ed. (R.), 84, Handbook of Diseases of the (W. G. Syme), 2nd ed. (R.), 84
Nott, Herbert W., Gastro-duodenal ulceration (C.), 264
Nottingham Hospital Saturday Fund, 790
Novasurol, effect of intravenous and intramuscular inoculations of, in rabbits (P. Lazarus-Barlow), 127; and ammonium chloride treatment of ascites by (Sir John F. H. Broadbent), 1326
Nurse, village, telephone service and the, 1363
Nursery schools, 1106; (P.I.), 1152, 1255
Nurses' Co-operation, annual report of the, 824; in misfortune (A.), 459; mental, examinations for, 975, honours to, 166; Queen's, 482
Nursing, College of: applications for a charter, 518; Homes Registration Act (1927), doctors and (C.), 935, 990; in London, Central Council for District, annual meeting, 425; World, Who's who in the, 586
Nuttall, Prof. G. H. F., French honours for, 1051, 1155

O

Obesity, treatment of, by ultra-violet rays (C. L. Williamson and C. H. Broomhead), 231

OBITUARY.

Bassett-Smith, Sir Percy, K.C.B., C.M.G., F.R.C.P. Lond., F.R.C.S. Eng., 56—Baster, James Clement, L.R.C.P. Irel., J.P., 265—Briggs, Dr. William Perry, 942—Brown, Frederick Gordon, M.R.C.S., L.S.A., 161—Brown, Lt.-Col. Robert Tilbury, C.M.G., M.D. Durh., 207, 312—Browne, Henry William Langley, O.B.E., M.D. Birm., F.R.C.S. Edin., LL.D. Toronto, 575—Brunyate, Thomas Tombleson, M.D. Oxf., 212—Campbell, Sir Robert Neil, Col., 577—Carson, Joseph Thompson, M.B., F.R.C.S. Edin., 1203—Church, Sir William, Bart., K.C.B., late P.R.C.P. Lond., 939—Craggs, Sir John, 979—Crosby, Thomas Villiers, M.D. Lond., 994—Cumston, Charles Greene, M.D. Geneva, 886
Duckworth, Sir Dyce, Bt., M.D. Edin., 210
Ferrier, Sir David, M.D., D.Sc., F.R.S., 627—Fifield, Lionel Richard, F.R.C.S. Eng., 677—Fletcher, Cavendish, M.B. Lond., 837—Forman, Robert Hall, Col., L.R.C.P. Edin., L.R.F.P.S. Glasg., 409—Foster, William James, F.R.C.S. Eng., 1104
Garner, Col. Cathcart, C.M.G., C.B.E., 368—Goulston, Arthur, M.D. Camb., 57—Guthrie, Thomas Clement, M.B. Edin., 478
Hodsdon, Sir James, K.B.E., F.R.C.S. Edin., 1154, 1203—Howarth, William James, C.B.E., M.D., Ch.B. Vict., D.P.H., 1303—Hulbert, Henry Louis Powell, M.D. Camb., D.P.H., 941
Jones, Archibald Mason, M.D., Ch.B., F.R.C.S. Edin., 1355—Jones, Dr. S. Lloyd, 424—Joynt, Richard Lane, O.B.E., M.D. Dub., F.R.C.S. Irel., 836
Keatinge, Henry Pottinger, C.M.G., M.B. Durh., F.R.C.S. Eng., 1355—Keighley, John William, M.D. Edin., 478—Kilner, Henry Goff, M.B., B.S. Lond., 678—Kinkead, Richard John, M.D. Dub., 678
Lang, Basil Thorn, B.Chir. Camb., F.R.C.S., 211—Lister, Richard Francis, M.R.C.S. Eng., 941—Longfield, William Digby, Dep. Insp. Gen. Hosp. and Fleets, 1146
McArdle, John Stephen, M.Ch., R.U.I., F.R.C.S. Irel., J.P., 836—McCandlish, John Gordon, L.R.C.P. Edin., 23—Macdonald, James Alexander, M.D., M.Ch. R.U.I., LL.D. Belf., 940—MacDougall, John Aymers, M.D., F.R.C.S. Ed., 1305—McKisack, Henry Lawrence, M.D. R.U.I., F.R.C.P. Lond., 736—Maclean, Kenneth Alexander, M.B., Ch.B. Edin., 1257—Maher, Maj.-Gen. Sir James, C.B., L.R.C.P. & S. Edin., 103—Mahony, Michael Joseph, D.S.O., M.D. N.W.I., 57—Marshall, George Balfour, M.D. Edin., F.R.F.P.S. Glasg., 316—

Mason, William Inglis, M.R.C.S., L.S.A., 424 — Middleton, George Stevenson, M.D., LL.D., F.R.F.P.S. Glasg., 735 — Miller, Alexander Cameron, M.D., F.R.S. Edin., 110—Milligan, Robert Arthur, O.B.E., M.D. Durh., J.P., 265—More, Lt.-Col. Paxton St. Clair, O.B.E., 161—Morris, Thomas Henry, M.B., C.M. Glasg., 391—Muir-Smith, Dr. William J.P., 680—Mullock, Richard Wilson, M.D. Dub., 736
Nicholson, Thomas Dryden, M.B. Edin., 1000—Noguchi, Hideyo, 1083
Oswald, Landel Rose, M.B. Glasg., 736
Palm, Theobald Adrian, M.D. Edin., 213 — Phillips, Francis Barclay Willmer, M.D. Oxf., B.Sc. Lond., D.P.H., 736 — Playfair, Hugh James Moore, M.D., F.R.C.P. Lond., F.R.C.S. Eng., 677 — Porter, Sir Robert, K.C.B., C.M.G., 460, 518
Rankine, John Lawson, M.R.C.S. Eng., 943—Russell, Elizabeth D., M.R.C.S. Eng., D.P.H., 425
Saberton, Claude William Scott, M.D. Manch., D.M.R.E., 265—Shuttleworth, George Edward, B.A. Lond., M.D. Heidelberg, M.R.C.S. Eng., 1203—Smith, Maynard, C.B., M.B. Lond., F.R.C.S. Eng., 629—Stuart, Alexander, M.D. Edin., 376 — Swinton, Lieut.-Col. Francis Edward, C.I.E., M.R.C.S. Eng., 103
Thomas, John Raglan, M.D. Lond., M.R.C.S. Eng., 529
Waller, Harry Mortlock, M.R.C.S. Eng., 1156—Wheatley, James, M.D. Lond., D.P.H., 528—Willett, Edgar William, M.D. Oxf., F.R.C.S. Eng., 837—Williams, Sir Dawson, M.D., F.R.C.P. Lond., 476—Wise, Alfred Thomas Tucker, M.R.C.S. Eng., M.D. Brux., 678
Young, Lieut.-Col. A. W. Cook, I.M.S., 623—Young, James Buchanan, M.B., D.Sc., F.R.S. Edin., 736—Young, William Alexander, M.B. St. And., 1257

Obstetric practice at the Rotunda Hospital, 969
Occupation, health, and mortality in the light of the Registrar-General's decennial supplement, 254
O'Connor, Donald M., Gastro-duodenal ulceration (C.), 264
O'Donovan, W. J., on lupus and its treatment, 721 ; Treatment of occupational (non-malignant) dermatitis (M.T.T.), 719 ; on ultra-violet light therapy of lupus, 392
Oertel, H., Outlines of Pathology (R.), 28
Œsophagus, cicatricial stenosis of (Lindley Sewell), 1008 ; transpleural exploration of the (W. H. C. Romanis and D. F. A. Neilson), 386 ; (C.), 468
Offices Regulation Bill (P.I.), 674
Ogilvie, A. G., and Wilkinson, K. Douglas, Rheumatism, tonsils, and glands, 647
Ogilvie, W. H., on treatment of acute osteomyelitis, 500
Okell, C. C., and Parish, H. J., Two studies of streptococcal infections, 746
Old age, the care of, 207
Oldham, J. Bagot, Sarcoma of cheek treated by operation and injections of colloidal lead, 28
Oliveros, P. Guinénez, Majorca as a health resort (C.), 534
Onychia, treatment of (A. M. H. Gray) (M.T.T.), 1340
Open-air schools (P.I.), 1152
Ophthalmia neonatorum, prevention of blindness from (A.), 612
Ophthalmological Society's Congress, proceedings, 859
Ophthalmology, Aids to (N. Bishop Harman), 7th ed. (R.), 761 ; human, relationships between animals and, 859 ; in relation to general medicine, 83
Opium question in Persia, the (A.), 457
Oppenheimer, Carl, Lehrbuch der Enzyme (R.), 136
Optical Practitioners Bill (L.A.), 89 ; registration of : report of departmental committee, 44
Orbit, inflammatory infections of, diagnosis and treatment of, discussion on, 968
Ormerod, A. L., on the potentially tuberculous child, 722
Orr, J. B., Milk consumption and the growth of school-children, 202
Os, complete occlusion of external, case of labour with (E. O. Croft and A. M. Claye), 231
Ostelin, treatment of primary or essential marasmus by (Kenneth McFadyean), 181
Osteomyelitis, acute, treatment of, 499 ; in long bones, chronic (H. Hallilay), 490, 1054
Oswald, Landel Rose (O.), 736
Otology, The Essentials of (G. B. McAuliffe) (R.), 914
Otosclerosis, pathology of, 1176 ; working hypothesis for research in, 1175
Out-relief, expenditure on (P.I.), 1307
Ovarian extract, clinical applications of (L.A.), 1181 ; hæmorrhage simulating acute appendicitis (R. K. Wilson), 1221 ; (C.), 1303 ; hormone, the (E. C. Dodds), 1107 ; thrombophlebitis, puerperal, case of, 341
Ovary, calcification of, dysmenorrhœa from, 1282
Over-prescribing, alleged (C.), 836
Ovulation and the menstrual cycle, 658
Owen, Ambrose W., Aural systemic infection (C.), 105
Oxford Museum of Science, 893
Oxygen pressure in inspired air, effects of alterations of, on cancer growth and body-weight of rats and mice (J. Argyll Campbell and W. Cramer), 828

P

Pain, heat in the relief of (L.A.), 507 ; in its medico-legal aspects, 656
Palæopathology and evolution (J. C. M. Given), 164
Palate, the soft, in diagnosis, 257
Palestine, medical services in (P.I.), 937
Palm, Theobald Adrian (O.), 213
Palmer, H. Mark, Of hallucinations, 1277
Pancreatic calculi, multiple, further case of (E. C. Lindsay), 700
Pancreatitis, traumatic, case of (Herbert R. Mayo and Edward A. Ellis), 495
Pancrobilin pills (Reed and Carnrick), 114
Panel practitioner, case of alleged over-prescribing by, 776 ; criticism of (P.I.), 419
Panton, P. N., and Marrack, J. R., Clinical Pathology, 2nd ed. (R.), 760 ; and Valentine, F. C. O., on liver treatment of pernicious anæmia, 872
Paralysis cured by malaria : first known case—1850 (E. W. Gudger), 585
Paramore, R. H., Case of eclampsia treated with spinal anæsthesia, 963
Paraphenylene-diamine labyrinthitis (E. Watson-Williams), 1123
Parasitic fœtus, on a (Sir J. Bland-Sutton, Bt.), 24 ; worms, sex in, 1312
Paratyphoid epidemic, Tenterden (C.), 106
Paratyphoid B fever, an outbreak of (Iris V. I. Ward), 389
Paré, Ambroise, and the treatment of gunshot wounds, 840, 946, 998

PARIS, CORRESPONDENCE FROM.—Albuminuria, intermittent, traced to ingestion of milk, 1041—B.C.G. vaccination, results of, 465, vaccine, 1142—Bronchopneumonia in childhood, treatment of, 99—Deaths of medical men, 369—Diphtheria, inoculation against, 1041—Disalbuminised serums in diphtheria and tetanus, 466—Health statistics, some Paris, 369—Hospital extensions, 369—Insulin in obliterative arteritis, 100, substitutes for, 99—International Medical Centre, inauguration of, 369—Milk, dried, fever from, 99—News items, 369, 466, 1041, 1143—Preoperative inoculation against sepsis, 466—Rheumatism, articular, 100—Trypanosomiasis, treatment of human, 1041—Tuberculosis, biological reactions in, 1041

Paris, post-graduate medical study in (A.), 1187
Parish, H. J., and Okell, C. C., Two studies of streptococcal infections, 746
Parker, George, Discovery of the anæsthetic powers of nitrous oxide, 60
Parkinson, John, on cardiac infarction, 188 ; and Bedford, D. Evan, Cardiac infarction and coronary thrombosis, 4

PARLIAMENTARY INTELLIGENCE.

Accidents, traffic, children and, 422—Additional benefits, administration of, 1047, State grants for, 1151—Address, debate on the, 319, 372—Aged Friendly Society members, medical benefit to, 1255—Air Force, tuberculosis in the, 475—Amersham Infirmary, overcrowding of, 785—Animals and poison-gas experiments, 891—Approved Societies, 421, and additional benefits, 631—Army estimates, 578, invaliding from the, 474, storage of drugs and medical supplies in the, 1256, and Navy, tuberculosis in the, 474—Artificial lighting research, 784 ; Artificial silk factories, health conditions in, 631, works, gas fumes from, 784 ; sunlight treatment, 1359—Asbestos workers, health of, 891
Beet-sugar effluent and public health, 374—Bethlem Hospital Bill, 891—Birth control, 1101—Birth-rate, decrease in, 1151—Blind persons, welfare of, 632, 1358—Board of Survey, procedure of the, 630—B.B.C. and medical practitioners, 475—Budget statement, 891
Canadian emigrants, medical examination of, 527, 1306, 1307—Cancer, 1101—Certification difficulties, 420, panel practitioners and, 527—Charities, supervision of, 734—Children's Bill, 423—Chiropodists (Registration) Bill, 1049—Cocaine and cocaine hydrochloride, exemption orders for, 1202—Colonies, Crown, medical staff in the, 676—Consolidated Fund (No. 1) Bill : distress in coal-mining areas, 675—Cornish mines, health conditions in, 734—Coroners and instructions to juries, 1255—County medical officer's appointment, 1050, salaries of, 423—Cream, use of emulsifiers in, 581, substitutes for, 993—Creameries, Scottish, and preservative restrictions, 422
Deaf and dumb, Government and the, 1305—Death certificates and reports to the coroner, 994—Death of a child after operation, 676—Deaths of women in pregnancy, 937—Dental and ophthalmic treatment, 1098, benefit, claims for, 1359, charges to approved societies, 422, treatment, National Health Insurance, 632—Dentist, free choice of, 938—Diphtheria in London elementary schools, 676, notification of, 631—Dispensers, unqualified, 578—Dogs, Protection of, Bill, 373, 936—Drugs and appliances, cost of health insurance, 891—Drugs, dangerous, importation of, 581—Drunkenness in London, 631
Edinburgh Corporation Bill, 887—Emigrants to Canada, medical examination of, 527, 1306, 1307—Experimental clinics, 1097—Experiments on living animals, 581—Ex-Service men and medical treatment, 474
Factory inspectors and the prevention of accidents, 524, in Scotland, 473, 581, shortage of, 523—Fighting services, coördination of the, 675—Food and Drugs Act, local authorities and, 1255, (Adulteration) Bill, 1254—Foundling Hospital site, the, 735, 1153—Franchise Bill, 319
Health insurance, 419, (Provisional Regulations), 992—Holloway Prison Hospital staff, 473—Hop-fields, sanitary conditions in the, 892—Hospital beds for tall persons, 475, coördination, 675, Houses in unhealthy areas, 1307—Housing construction, Government subsidy and, 1049, problem, 1100
India, alcohol and drug revenue in, 475—Infant mortality and undernourishment, 630, in the colonies, 632—Infanticide Bill, 1357—Insurance benefits, persons entitled to, 1152, effect of, on health, 422, health in Scotland, 472—Insured persons and cost of mileage and drugs, 784—Iraq, factory inspection in, 527
Kenya, medical and sanitary service in, 527—King's speech, 319
League of Nations and the world output of morphine, 993—Leprosy in the Empire, treatment of, 475, in Palestine, 1050—Liquor (Disinterested Ownership and Managership) Bill, 1357—Local Authorities (Emergency Provisions) Bill, 937—Local

Government Reform, 938, Royal Commission on, 735—London, persons found dead in, 526—Lost cards and eligibility for sickness benefit, 892—Lunacy administration, 580—Lymph, Government, 1151
Massage and electro-therapeutic treatment, 892—Maternal mortality, 631, in Kensington and Southwark, 1256, research, 937—Maternity benefit, 1098; and child welfare centres, number of, 891, supply of milk at, 1152—Medical Consultative Board and hygienic conditions, 630, cost accounts for defence forces, 1306—Mental hospitals, croton oil in, 1306—Mentally defective children, contributory pensions and, 1306, London schools for, 1049—Methylated spirit drinking in Scotland, 527—Midwives, training and supply of, 676—Military hospitals, beds in, 473, closing of, 527, upkeep of, 579—Milk, adulteration of, 1202, classification of, 994, consumption, stimulation of, 374, Grade A, prescriptive standard of, 1152, production, 526, skimmed, and rickets, 528, surplus, and necessitous areas, 631, tinned, production of, on the Continent, 422—Miners and silicosis, 1202, Medical Aid Societies, 781, phthisis, 993—Mines, accidents in, 1356, 1358—Mining areas (Coal), distress in, 675—Ministry of Health vote, 1048, 1100—Monmouthshire, health conditions in, 420—Morphine, League of Nations and world output of, 993—Motor accidents, voluntary hospitals and, 735, spirit, danger of lead tetra-ethyl in, 524, 526, 527, 732, tax, petition against, 675, vehicles, public, and first-aid outfits, 1359
Nantwich area, shortage of water in, 1358—National Health Insurance Bill, 523, 779, 936, 991, 1046, 1097, 1150, 1254, 1305, cost of, 474, funds, 373—Naval hospitals, 473, 527, recruits, disabilities of, 632—Navy, eye disease in the, 785, Royal, invalidings from, 423, 578, 630, 674, 1151, 1307—Neurasthenia, ex-Service men and, 423—New medical discoveries, publication of, 1050—Night work by youths in mines, 526—Noise, motorists and excessive, 1255—Northern Ireland, insurance benefits in, 1046—Notification of infectious diseases, 676—Nursery and open-air schools for delicate children, 1152, 1255—Nystagmus, miners', 374, patients and unemployment benefit, 474
Offices, inspection of, 475, Regulation Bill, 674—Opium Convention, International, 422, cultivation in British India, 473, export of, from India, 473—Opticians, free choice of, 784—Out-relief, expenditure on, 1307
Palestine, leprosy in, 1050, medical services in, 937—Panel doctor's prescriptions, official criticism of, 891, practitioners, criticism of, 419—Pension appeals, new medical evidence and, 1256; awards, 581, final, 1256—Pensioner and specialist medical treatment, 784—Pensioners with chronic disabilities, treatment of, 1307—Pensions, conditional disability, 423, hospital, new, 419, hospitals in Scotland, 526, new method of paving, 631—Petroleum Amendment Bill, 839—Pharmacists in the R.A.M.C. territorial units, 1256, 1305—Poison gas and bacteria in warfare, 1307—Poisonous gases, storage of, 1254—Poor-law maintenance, cost of, 373, relief, 473—Portsmouth army hospital accommodation in, 473, naval hospitals, 422—Post Office messengers and flat-foot, 526—Practitioner and patient, altered relations between, 420—Pregnant women and sickness benefit, 632—Preservatives in butter and cream, 993—Prison services, hospital officers in the, 1306
Railway dining-car attendants, health of, 374—Rating and Valuation Bill, 1253—Refuse, domestic, infection from, 374—Regional medical officers' fees, 993—Registration (Births, Deaths, and Marriages) Bill, 935—Reorganisation of Offices (Scotland) Bill, 522—Rheumatism, clinics for treatment of, 891—Rickets, skimmed milk and, 528—Royal Air Force hospitals, 581—Royal Army Medical Corps, new candidates for the, 579, reduced strength of, 578—Royal Veterinary College, London, 938—Rural districts, sanitation in, 734
Sale of Food and Drugs Acts, administration of, 1050—School-children, necessitous, feeding of, 1358—School medical services, 993 — Scotland, health insurance in, 472, medical service in Highlands and Islands, 1253, pensions hospitals in, 526—Scottish Board of Health vote, 1253, disabled pensioners, treatment of, 581, pensioners and hospital treatment, 423—Service hospitals, coördination of, 475—Sewage, discharge of crude, into a river, 1255 — Shops (Hours of Closing) Bill, 732—Silicosis, committees on, 1255—Sinarango Prison Camp, dysentery in, 839—Sleeping sickness in Mozambique, 937—Slum clearance schemes, 373, 676, 1253, 1306, 1356, in Wales, 1255, voluntary societies and, 1152—Small-pox among casuals, 937, among vagrants, 734, 1358, and vaccination, 475, contacts, isolation of pauper, 527, deaths from, 526, hospital accommodation, 735, hospitals, use of, as tuberculosis sanatoriums, 1152, in Aspull and Hindley areas, 474, in England and Wales, 475, 1358, in London, 892, vagrants and the spread of, 938—Smoke abatement, 632—Social service, cost of, 373—Solomon Islands, dysentery among native prisoners in, 784—Specialist benefit, 782, 1151, and consultant service on National Insurance, 1256—Sulphur, use of, in barley milling, 937, 1306—Sunday Trading Bill, 937—Supply of articles required in illness, 732
Tea duty, the, 1356—Tetra-ethyl in motor spirit, 524, 526, 527, 732—Third Party Indemnity Insurance Bill, 838—Tinned foods, nutritive value of, 423—Tuberculosis among members of Defence Forces, 1306, in the Air Force, 475, in the Army and Navy, 474, in England and Wales, 937, invaliding from the Navy, 674, patients and vaccination, 1256, Scottish Board of Health and, 1253, treatment, cost of, 1307—Tuberculous children, institutional treatment of, 1152, war pensioners, treatment of, 1358
Vaccination, boards of guardians and, 735, 1151, boy's death after, 1358, Committee's report, 993, 1255, compulsory, 1100, statistics, 1255—Venereal disease clinics in Scotland, voluntary, 839, notification of, in Scotland, 423, treatment of, 993, treatment of, at sea, 891, treatment of, in Scotland, 938, 1253—Vermin Destruction Bill, 526, 676—Vivisection, petition against, 1253—Voluntary health insurance contributors, 373; Voluntary hospitals and motor accidents, 1102, rates paid by, 1202—Voronoff, Dr., visit of, to England, 1306
Washington Hours Convention, revision of, 1152, 1307—Water, fresh, on merchant ships, 1359 — Water-supplies, municipal, 526—Water-supply in schools, 1255—Welsh Board of Health, 1359, schools, insanitary, replacement of, 785—Whittlesey, diphtheria epidemic at, 632—Women, employment of, in Indian mines, 632—Woollen and worsted industries, accidents in the, 993—Workhouses, removal of children from, 784
X ray examinations in cases of fracture, 1047

Parry, L. A., on the trial of Mary Blandy, 291
Parsons, Allan, on post-encephalitis and its problems, 912
Parsons, F. G., The Earlier Inhabitants of London (R.), 86
Parsons-Smith, B. T., on cardiac infarction, 190
Partridge, William, Dictionary of Bacteriological Equivalents (R.), 659
Parturition, influence of, upon insanity and crime (A. Louise McIlroy), 379; discussion on, 447
Pass lists: Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, 214, 892—Royal College of Physicians of London, 317, 942—Royal Colleges of Physicians of London and Surgeons of England, 317, 995—Royal College of Surgeons of Edinburgh, 737—Royal College of Surgeons of England, 1308—Society of Apothecaries of London, 267, 478, 679, 942, 1205, 1359—University of Bristol, 1258—University of Cambridge, 838, 942, 1359—University of Dublin, 633—University of Durham, 789, 1359—University of Liverpool, 161, 679—University of London, 110, 942, 1257—University of Manchester, 679—University of Sheffield, 161, 995—University of Wales, 214
Paterson, Marcus, on intestinal tuberculosis, 724
Patey, D. H., and Scarff, R. W., Position of histology in prognosis of cancer of breast, 801
Pathologist, work and responsibilities of the (Sir Bernard Spilsbury), 1362
Pathology, Clinical (P. N. Panton and J. R. Marrack), 2nd ed. (R.), 760; Outlines of (H. Oertel) (R.), 28; the status of (Charles Powell White), 381; Text-Book of (Frances Delafield and T. M. Prudden), 14th ed. (R.), 608
Patrick, C. Vincent., A case of thoracopagus, 282
Patterson, Jocelyn, Fractional test-meal analysis: simplified technique, 492
Patterson, Norman, on inflammatory affections of the orbit, 968
Pavlov, Ivan, on certain problems in physiology of cerebral hemispheres, 970
Payne, Reginald T., Ambulatory treatment of varicose veins (M.T.T.), 1189, 1240
Peachey, G. C., the homes of the Hunters (Thomas Vicary lecture), 360
Pearl, Raymond, the Rate of Living (R.), 1231
Pearson, Noel F., Case presenting a clinical picture of congenital heart disease with contrary pathological findings, 79
Pearson, William, on bone pegs, 81
Peart, J. F., Campaign against venereal diseases (C.), 883, 989
Péhu, M., and Dufourt, A., La Tuberculose Médicale de l'Enfance (R.), 1285
Pellagra, alcoholism and (A.), 613; case of, 791
Pemphigus neonatorum, note on ultra-violet radiation in (A. W. Gregorson), 703; of the new-born, the so-called (A.), 458
Pension awards (P.I.), 581
Pensioners, Scottish disabled, treatment of (P.I.), 581; tuberculous war, treatment of (P.I.), 1358
Pensions, new way of paying (P.I.), 631
Peptenzyme elixir (Reed and Carnrick), 428
Pepys as a medical commentator (A.), 405
Perdrau, J. R., Encephalo-myelitis following vaccination (C.), 1201
Peri-arthritis, toxic, note on the treatment of (L. C. Dundas Irvine), 963
Pericardial knock associated with spontaneous pneumothorax (W. A. Lister), 1225; pain (A.), 198
Perinephric suppuration, note on early diagnosis of primary (S. A. Lane), 1011
Perineum, immediate repair of the torn, under local anæsthesia (F. J. Browne), 1281
Periodical medical examination (A.), 347
Peritoneal cavity, absorption of blood from (Howard Florey and L. J. Witts), 1323
Peritonitis, tuberculous, prognosis of, in children (A.), 348
Perkins, George, Signs by which to diagnose congenital dislocation of hip, 648
Persia, the opium question in (A.), 457
Peters, E. A., and Lake, Richard, Handbook of Diseases of the Ear, 5th ed. (R.), 451
Pettenkofer, Max von: His Theory of the Ætiology of Cholera, Typhoid Fever, and other Intestinal Diseases (R.), 192
Pharmacognosy and Materia Medica (Homer C. Washburn and Walter H. Blome) (R.), 762
Pharmacology, the new (A.), 975
Pharmacopœia, the British (L.A.), 1078, report of subcommittee, 1086; the Great Ormond-street Hospital, 216; Paddington Green Children's Hospital, 428
Pharmacotherapeutics (S. Solis-Cohen and T. S. Gittens) (R.), 1286

Pharmacy, Whys in (Edsel A. Ruddiman), 3rd ed. (R.), 399
Phase Rule and its Applications, The (Alexander Findlay), 6th ed. (R.), 608
Philip, Sir Robert, on causes of decline in tuberculosis mortality, 858
Phillips, Francis Barclay Willmer (O.), 736
Phillips, James, Position of the Voluntary hospitals (C.), 519; Subcutaneous emphysema during parturition (C.), 1354
Phlebitis, acute syphilitic (A.), 1080
Phonetics, Experimental, International Society of, 935
Photographic Almanac for 1928, British Journal, 320
Physical and mental excellence, correlation of (A.), 93; treatment, qualified practice in (A.), 1340
Physics for Medical Students, Practical (Mary D. Waller) (R.), 503
Physiological Chemistry, Introduction to (Meyer-Bodansky) (R.), 192; Society, Prof. Schafer's jubilee history of (L.A.), 454
Physiology and psychology, borderland of (L.A.), 1023; in politics (A.), 301
Physiotherapy, a Practice of (C. M. Sampson) (R.), 293
Pickett-Thomson Research Laboratory, Annals of (D. and R. Thomson, editors), Vols. II. and III. (R.), 30
Piggott, Arthur E., Disposal of the dead (C.), 417
Pinch, A. E. Hayward, on the present position of radium therapy, 602
Pituitary, anterior lobe of, relation of, to reproductive organs (C. W. Bellerby), 1168
Placenta accreta, case of, 1177
Plague in South Africa, 776
Plasmochin and "plasmochin-compound," effects of, on gametocytes of benign tertian and subtertian malaria (P. H. Manson-Bahr), 25; or plasmoquine, 216, 482; toxic symptoms from (C.), 673
Platt, Harry, on ætiology of chronic arthritis, 395; on treatment of acute osteomyelitis, 499
Playfair, Hugh James Moore (O.), 677
Play-reading in aid of a welfare centre, 1052
Pleural pain, mechanism and elements of (A. I. G. McLaughlin), 489
Pleurisy, treatment of (L. S. T. Burrell) (M.T.T.), 304
Plimmer, R. H. A., on recent advances in the knowledge of food, 184
Pluriglandular compounds (British Organotherapy Co., Ltd.), 322
Plymouth, M.O.H.'s report, 1092
Plympton St. Mary, M.O.H.'s report, 1352
Pneumatosis of the bowel, cystic, a case of (J. Silverstone), 129; (C.), 216
Pneumococcal types, mutability of (A.), 455
Pneumonia in childhood, 397; post-operative (A.), 301; treatment of, by glucose, 586
Pneumonic lungs, a virus in, 740
Pneumothorax, spontaneous, case of pericardial knock associated with (W. A. Lister), 1225
Poliomyelitis, acute, ætiology and treatment of (S. A. Kinnier Wilson), 11; convalescent serum in, 896; research on (A.), 919; *and see* Infantile paralysis
Politics, physiology in (A.), 301
Polydactylism in twins, case of (H. C. Craven Veitch), 650
Polyneuritis complicating mumps, 998
Polynuclear Count, The (W. E. Cooke and Eric Ponder) (R.), 761
Ponder, Eric, and Cooke, W. E., The Polynuclear Count (R.), 761
Poole, M.O.H.'s report, 832
Poor-law hospital, work of a (A.), 1293; institution, transforming the, 778; maintenance, cost of (P.I.), 373; medical treatment (P.I.), 475; relief (P.I.), 473
Populations, the growth of (A.), 565
Porphyrin in the mouth, on (A. A. Hymans van der Bergh), 281
Porter, C., and Robertson, W., Sanitary Law and Practice, 6th ed. (R.), 761
Porter, Sir Robert (O.), 460, 518
Pörtmann, G., on vasomotor affections of the internal ear, 1176
Post-graduate lectures, courses and demonstrations: Berlin, 162—Carlsbad, 479, 1359 — Fellowship of Medicine, 55, 111, 162, 213, 267, 582, 1199—Glasgow Post-Graduate Medical Association, 1051 — South-West London Post-Graduate Association, 1051 — Vienna University, 375, 583
Post-graduate medical study in Paris (A.), 1187
Post-mortem Appearances (Joan M. Ross), 2nd ed. (R.), 608
Post-operative sepsis in general and puerperal sepsis in particular (Victor Bonney), 435
Posture, changes of, variations in the volume of the chest with (J. L. Livingstone), 754
Poulton, E. P., Liver treatment of pernicious anæmia, 875
Power, S. M., a case of tetanus, 910
Power, Thomas D., Epilepsy in dementia præcox (C.), 884
Poynton, F. John, The Foundling site (C.), 785
Pregnancy and parturition in patients with crippled hearts, a record of fifty consecutive cases of (John Hay and Elizabeth Hunt), 271; deaths of women in (P.I.), 937
Premature birth, mental disabilities and (A.), 244
Prentice, David, Meinicke micro-reaction, 493
Pre-operative inoculation against sepsis, 466
Prescription pad, a, 113
Presentations to medical men: Dr. D. S. Davies, 1156—Dr. D. Robertson Dobie, 376—Dr. Edward Fielden, 162—Dr. Ashley Glegg, 893
Preservatives in food, 57; (A.), 1290
Preventive medicine in Soviet Russia (A.), 768
Price, John Parry, New form of trial frame (N.I.), 344
Prison breakers, 166; population, our (A.), 195; service, hospital officers in the (P.I.), 1306
Prohibition: Its Economic and Industrial Aspects (H. Feldman) (R.), 557
Prokliman (Clayton Aniline Co.), 114
Promise to marry, effect of illness upon (M.L.), 985
Prosperity, influence of, on health, 427
Prostate, enlarged, mortality of operations upon the (Harold Edwards), 77; (C.), 209
Prostatic enlargement, X rays in, 1088; retention, treatment of, by electro-coagulation (J. G. Remijnse), 750
Protection, professional (L.A.), 1233, 1247
Protonuclein (Reed and Carnrick), 114
Protozoenkunde, Lehrbuch der (F. Doflein), 5th ed. (R.), 914
Protozoology, Medical, An Introduction to (Robert Knowles) (R.), 398
Prudden, T. Mitchell, and Delafield, Frances, a Text-book of Pathology, 14th ed. (R.), 608
Pruritus ani, benacol in the treatment of, 378
Pruvost, Pierre, Tuberculose pulmonaire: Tuberculose des séreuses (R.), 1021
Psychiatry, the new, 1074
Psychological personality (Robert Hutchison), 682
Psychology and the Soldier (F. C. Bartlett) (R.), 815; Studies in (William Elder) (R.), 815
Psychoneuroses and industry (L.A.), 242; treatment of the (A.), 867
Psychoneurosis, a case of, 237; a sympathetic, 792; (C.), 842
Psychoses, the minor, a study of the incidence of (Millais Culpin), 220; (C.), 414, 470
Public health, diploma in, 634; in the local legislation of 1927, 52; international course in (A.), 37; new chair of (L.A.), 195; service and the private practitioner, relations between (Frederick E. Wynne), 172

PUBLIC HEALTH SERVICES.—Anti-tuberculosis schemes, 311—Coördination of public health services, 154—Dundee, dissatisfaction with panel practice at, 102—Hop-pickers' camps: their supervision and sanitation, 879—Infectious cases, diagnosis and removal of, responsibility of part-time M.O.H. for, 725—Infectious disease in England and Wales, weekly reports, 52, 103, 155, 213, 258, 312, 376, 418, 467, 518, 577, 624, 669, 727, 777, 832, 880, 944, 986, 1042, 1093, 1154, 1188, 1248, 1301, 1352—Local authorities and sanitary science, 517—Medical benefit inquiry, a, 986 — Medical officers of health reports, 725, 777, 832, 1092, 1153, 1299, 1350, brief survey of 1926, 51—Mental hospitals reports, 576, 726, 1248—N.H.I. Amending Bill, 831—Over-prescribing by panel practitioner, case of alleged, 776—Registrar-General's weekly return, 155—Scarlet fever, a squabble about, 311—Ultra-violet treatment at public baths, 418, 986

Puerperal hæmorrhage, three cases of, 292; infection (L.A.), 33; sepsis, case of spasmodic auricular fibrillation and broncho-pneumonia complicating (James A. Kerr), 128, in particular, post-operative sepsis in general and (Victor Bonney), 435; (C.), 520, maternal mortality from, 1178
Pulmonary abscess, case of facial neuralgia associated with (R. C. Hutchinson and J. S. B. Stopford), 494; (C.), 575; atheroma (L.A.), 974; (C.), 1045; embolism, operation for, 1088; fibrosis (L.A.), 609, the late results of (W. Burton Wood), 596; tuberculosis, bovine type tubercle bacilli from sputum in (W. T. Munro and A. Stanley Griffith), 384, Its Etiology and Treatment (David C. Muthu), 2nd ed. (R.), 29; (C.), 521, surgical treatment of (F. Häberlin), 99, tuberculin in: with special reference to Dreyer's diaplyte (W. Cecil Bosanquet), 74
Pulse-wave velocity (A.), 91
Punch, A. Lisle, Wilkinson, Russell, Brooke, R. StC., and Myers, C. S., Influence of ultra-violet rays on industrial output, 1120
Punishment, the assessment of, 395; (A.), 405
Purpura of the urinary tract (Frank Kidd), 897; (L.A.), 917
Pyæmia, case of acute staphylococcal (S. Deaner), 391
Pyloric ulcer, case of partial gastrectomy for, followed by perforating jejunal ulcers (V. P. Robinson), 703
Pylorus, congenital hypertrophic stenosis of (C.), 573; problem of the (L.A.), 1288; spasm of the, in infants (A.), 1292
Pyorrhœa Alveolaris (F. St. J. Steadman) (R.), 239

Q

Quackery, suppression of, bequest for, 162
Qualification and after (A.), 1184
Queen Alexandra Memorial, 896
Queen's nurses, 482
Queen's University, Ontario, gift to, 1054

R

Rabbit, the sick, and the hunter, 113
Race betterment conference, 463
Rachitogenic dietary factor, is there a ?, 1133
Radiography, stereoscopic (L.A.), 763
Radiological equipment, modern: the new department at Edinburgh, 569
Radiology, Physics in Medical (Sidney Russ, L. H. Clark, and B. D. H. Watters) (R.), 1076
Radiostol (British Drug Houses), 428
Radiostoleum (British Drug Houses), 740
Radium for cancer (L.A.), 973; in the treatment of malignant disease (G. E. Gask), 843; rôle of, in treatment of cancer of the breast and tongue, 554; suspension of duty on, 1028; therapy in cancer, experimental basis of (S. Russ), 903, present position of, 602; treatment in cancer of mouth and tongue (G. E. Birkett), 953, of cancer (C.), 1146, 1202, of uterine cancer, 759
Rake, A. T., on achalasia and degeneration of Auerbach's plexus, 1174
Randle, Alan, and Marian, Charles, Two cases of typhus of anomalous type, 1224
Ranken, David, on effects of middle-ear disease on efficiency in civil and military life, 812
Rankine, Dr. J. L., death of, 943
Rare maladies, the lessons of (Sir Archibald Garrod), 1055
Rassen-Forschung (Walter Scheidt) (R.), 240
Rats, war on (A.), 456
Reading, M.O.H.'s report, 832

Reading, movements of the eye in (A.), 664
Reading and spelling (A.), 1132
Recorder's salary bequeathed to Pontefract Infirmary, 285
Rectum and colon, early diagnosis of cancer of, discussion on, 1124; (A. F. Hurst, T. W. Turner, and J. F. Venables), 1275
Rectum, cancer of: treatment and its results, 152; (C.), 262; prolapse of in the female, operation for (Frederick J. McCann), 1072
Redman, T., Bacteriophage from cases of rickets, 909
Refection (A.), 37
Reflexes, Postural: Die Lagereflexe des Menschen (Hans Hoff and Paul Schilder) (R.), 1285
Registers, medical and dental (A.), 510
Registrar-General's decennial supplement in relation to occupation, health, and mortality, 254; weekly returns, 154
Registration (Births, Deaths, and Marriages) Bill (P.I.), 935; of medical students (L.A.), 34; of optical practitioners: departmental committee's report, 44
Rehberger, George E., Lippincott's Pocket Formulary (R.), 815
Remijnse, J. G., Treatment of complete retention of urine of prostatic origin, by electro-coagulation, 750

REPORTS AND ANALYTICAL RECORDS.—Brandy, Gold Leaf (No. 1), 1128—Chocolate, Cadbury's dairy milk, 660—Nursery biscuits and biscuit powder, Robb's, 760—Wines, Australian: Melvina white and Imperium red (Southard and Co.), 344

Reprints, collections of, 946
"Republic, the grateful" (C.), 987
Respiratory diseases, disability due to (A.), 1131
Respiratory diseases, on the statistical epidemiology of the (Hilda M. Woods), 539
Respiratory diseases, prevalence of (L.A.), 561
Reticulo-endothelial system, the (L.A.), 763
Retinal blood stream, fragmentation of, 967; neoplasms, notes on the natural history of, 860
Retinoscopy lamp, a cheap (C.), 482
Retropharyngeal abscess, anæsthesia for opening (C.), 53
Rhazes and Avicenna (C.), 1145
Rheumatic conditions in school-children (Mary F. Williams), 720
"Rheumatic disease, the" (Fernand Bezançon and Mathieu-Pierre Weil), 1002
Rheumatic diseases, the (L.A.), 1024; (P.I.), 1048, Conference on, at Bath, proceedings of, 981, 1015; fever, case of, with myelocytic leucocytosis (W. Mackay), 702; pathogenesis of, in climatological relation to a possible insect carrier, 446; infection in childhood, influence of environment on (Reginald Miller), 1005
Rheumatism, acute, in childhood (C. J. McSweeney), 959, social factor in (C.), 1144; and Gout, Aspects of (Llewelyn Jones Llewelyn) (R.), 191; articular, 100; campaign against, in Germany, 516; clinical study of, 479; cost of industrial, to the country (Sir W. S. Kinnear), 1001; in childhood, detection and cure of, 190; industrial, 497; (L.A.), 505; juvenile, some public health aspects of, 446; London clinic for, 737; tonsillectomy and (L.A.), 713; (C), 786, 835, 884; tonsils and glands (K. Douglas Wilkinson and A. G. Ogilvie), 647
Rhinoplasty, new method of partial (E. Dujardin), 1280
"Rhodian" cigarettes, 1106
Richardson, D. L., Infectious Diseases and Aseptic Nursing Technique (R.), 114
Richet, Charles, The Natural History of a Savant (R.), 503
Richmond, R. T., Damages to bones and reputations (C.), 260
Rickets, anæmia and some recent views on (A.), 820; bacteriophage from cases of (T. Redman), 909; irradiated ergosterol in the treatment of (R. Aidin), 229; prophylaxis of (C.), 1249; skimmed milk and (P.I.), 528; treatment of (Helen M. M. Mackay) (M.T.T.), 923, 979
Ridley, Frederick, on the antibacterial body lysozyme, 1228
Rigby, Sir Hugh, appointed Serjeant-Surgeon to the King, 616
River pollution and sugar-beet effluent (M.L.), 308; joint advisory committee, meeting of, 310
Riviere, Clive, on the treatment of hæmoptysis in pulmonary tuberculosis, 723
Roback, A. A., Psychology of Character (R.), 1331
Robertson, Anne M., Health and Exercise for Girls (R.), 972
Robertson, W., and Porter, C., Sanitary Law and Practice, 6th ed. (R.), 761
Robinson, C. A., and Cumberbatch, E. P., Campaign against venereal disease (C.), 933
Robinson, Edwin B., Two simple tests for impurities in anæsthetic ether, 856
Robinson, R. H. O. B., Treatment of tuberculous epididymitis (M.T.T.), 95
Robinson, Victor Penrose, Partial gastrectomy for pyloric ulcer followed by two perforating jejunal ulcers, 703
Roboval (Roberts and Co.), 322
Rogers, Lambert, and Kennedy, Alex. Mills, Tumours of the spinal cord, 225
Rogers, Sir Leonard, Curative action of hydnocarpates and iodides in leprosy, 73; Forecasting Epidemics (R.), 557; Recent Advances in Tropical Medicine (R.), 1230
Rolleston, Sir Humphry, American honour for, 680; on the care of the school-child, 427
Romanis, W. H. C., and Neilson, D. F. A., Transpleural exploration of the œsophagus, 386
Rorke, Margaret, on treatment of gonorrhœa in pregnancy and the puerperium, 501
Rosacea, gastric secretion and other digestive factors in, 290
Rosner, Rudolf, and Matuschka, Joseph, Die Malariatherapie der Syphilis (R.), 344
Ross, E. Athole, Note on the pathology of epidemic catarrhal jaundice, 599
Ross, Joan M., Post-mortem Appearances, 2nd ed. (R.), 608
Ross, T. A., Incidence of the minor psychoses (C.), 414
Ross Institute and Hospital for Tropical Diseases, annual report, 1232
Rotunda, obstetric practice at the, 969
Rowlands, M. J., and Browning, Ethel, Relation of deficiency of vitamin B to atony of stomach, 180
Royal Academy Exhibition (A.), 978
Royal College of Physicians of Edinburgh, appointments, 996; elections, 375, 996; Morison lectures, 161
Royal College of Physicians of Edinburgh, Royal College of Surgeons of Edinburgh, and Royal Faculty of Physicians and Surgeons of Glasgow, pass-lists, 214, 892
Royal College of Physicians of London, diplomas granted, 789, election of fellows, 942; election of members, 266, 942; Harvey tercentenary, 621, 982, 1031; honorary fellowships, conferment of (A.), 351, 1034; licences granted, 266, 942; meeting of Comitia, 266 789, 942; pass-lists, 317, 942; scholarships, 996
Royal College of Physicians of London and Royal College of Surgeons of England, diplomas conferred, 266; pass lists, 317, 995
Royal College of Surgeons of Edinburgh, pass-lists, 737
Royal College of Surgeons of England appointments, 1308; Canadian graduates, fellowship examinations in Canada for, 831; diplomas and licences granted, 161, 582, 838, 1050, 1308; elections to Council, 679; elections to fellowship, 838; Hunterian bicentenary: festival dinner, 367; lectures at, 110; meeting of Council, 374, 838, 1050, 1308; Museum, annual report of (A.), 1338; pass-lists, 1308, prizes, 838
Royal Faculty of Physicians and Surgeons of Glasgow, admission of fellows, 1308; appointment of representative on General Medical Council, 1028; gift of Dr. Livingstone's surgical pocket-case, 375
Royal Institution, lectures and discourses, 375
Royal Medical Benevolent Fund, 96, 258, 450, 490, 586, 941, 1156, 1355
Royal Sanitary Institute, annual congress, 318
Royal Society, candidates for election, 409; conversazione (A.), 1083; Croonian lecture, 970; Foulerton research professorship, 58
Royal Society of Edinburgh, proposal of Fellows, 479
Royal Veterinary College, London (P.I.), 938
Royster, Hubert A., Appendicitis (R.), 451
Ruddiman, Edsel A., Whys in Pharmacy, 3rd ed. (R.), 399
Russ, Sidney, on the physics of diathermy, 187; Radium therapy in cancer, experimental basis of, 903; Clark, L. H., and Watters, B. D. H., Physics in Medical Radiology (R.) 1076
Russell, Dr. Elizabeth, the late, 425
Russia, Soviet, preventive medicine in (A.), 768
Russian Court, a Scotsman at the, 586
Ryle, J. A., on cardiac infarction, 189; Gastro-duodenal ulceration (C.), 104, 210; Hunter's cardiac infarct, 332; Treatment of ulcerative colitis (C.), 931

S

Saberton, Claude William Scott (O.), 265
Sacro-iliac subluxation (C.), 54
Sadtler, Samuel Schmucker, Chemistry of Familiar Things (R.), 86
Safeguarding of key industries, 378
Sahli's Clinical Methods: Lehrbuch der Klinischen Untersuchungsmethoden für studierende und praktische Aertzte, 7th ed. (R.), 292
St. Cyres lecture, 943
St. John of Jerusalem, Order of, appointments to, 111; promotions, 1360
Salford, hospital needs in, 267
Salicylates, action of, on the kidneys, 207
Salmond, M., Case of subcutaneous emphysema complicating labour, 757
Salpêtrière, anæsthetics at the, 62
Sampson, C. M., A Practice of Physiotherapy (R.), 292
Saner, F. D., Transcondylar fractures of the humerus in children, 698
Sanitary Law and Practice (W. Robertson and C. Porter), 6th ed. (R.), 761
Sarcosporidiosis, a case of (A. Srinivasulu Naidu), 549
Sargent, Percy, Abscess of the brain (C.), 728
Savant, The Natural History of a (Charles Richet) (R.), 503
Savatard, Louis, Treatment of cancers of the skin (M.T.T.), 823
Scanlan, J. J., Legal aid societies and the medical profession (C.), 1095; Newspaper insurance from a medico-legal point of view (C.), 574
Scarff, R. W., and Patey, D. H., Position of histology in prognosis of cancer of breast, 801
Scarlatiniform type, A critical examination of some cases of a (G. E. Friend), 274
Scarlet fever: antiscarlatinal serum and relapse (A.), 1081; passive immunisation against (Edward James), 227; relapses in (A. H. G. Burton and A. R. Balmain), 1060; relationship of, to other streptococcal infections, 748; the serum treatment of (J. A. Scott), 124
Schall, W. E., Stereo-fluoroscopy (C.), 626
Scheidt, Walter, Rassen-Forschung (R.), 240; Rassenunterschiede des Blutes (R.), 399
Schick test and immunity to diphtheria (Robert Cruickshank), 76
Schilder, Paul, and Hoff, Hans, Die Lagereflexe des Menschen (R.), 1285
Schilf, Erich, Die Blutgefässe der menschlichen Haut und ihr Verhalten Gegen Reize: translated from Sir Thomas Lewis's book, 1128
Schistosoma dermatitis, 1042
Schofield, Alfred T., Behind the Brass Plate (R.), 608
School-children, medical care of (L.A.), 1287
School, Errors in: Causes and Treatment (Sir John Adams) (R.), 998; health at: the doctor and the teacher (L.A.), 243; medical services (P.I.), 993
School-child, care of the, 427
School-children, feeding of necessitous (P.I.), 1358
Schools, infectious disease in (A.), 1339
Schott, Adolf, Carbon dioxide thermo-saline springs in the light of modern research, 546

Schultz-Charlton test solution ("Wellcome" Brand), 270
Schurr, C. G., on myopia in childhood, 1014
Schweitzer, Dr. Albert: his English visit, 479, 990
Sciatica: its varieties and treatment (Hunterian oration) (Anthony Feiling), 449
Scleroderma, hypoglycæmia in (A.), 458
Sclerosis of cord, subacute combined, case of, of sudden onset (S. C. H. Worseldine), 338

SCOTLAND, CORRESPONDENCE FROM.—Anderson College, 624—Budget and the reform of local authorities, 1041—Cream Regulations, the, 258, 624, 1041—Edinburgh Corporation Bill, 624, Health Week, 257, Maternity Hospital, 730, Royal Infirmary, 368, Royal maternity, 368—Education authorities election, 571—Friesian cow, the, 730—Galashiels enteric outbreak, 368—Glasgow cancer hospital, 730, hospital, a fee-paying, 413, V.D. Bill, 830—Industrial Health Education Society, 257—Insurance Fund, drain on the, 571, voluntary, 368—Medical Adviser to Edinburgh Corporation, 773—Prisoners, discharged, 773—Royal Victoria Hospital Tuberculosis Trust, 773—Steel houses, 413—University Physical Welfare Fund, 1041—Venereal disease, legislation against, 412, 624

Scotland, mental disorder in, 545; methylated spirit drinking in (P.I.), 527; pensions hospitals in (P.I.), 526; treatment of venereal disease in (P.I.), 938
Scott, J. A., The serum treatment of scarlet fever, 124
Scott, Sydney, on effects of middle-ear disease on efficiency in civil and military life, 812
Scott, S. Gilbert, Lead shot in appendix, 1122
Scottish Board of Health, debate on vote (P.I.), 1253; creameries and preservatives restriction (P.I.), 422; Maternity hospital (Elsie Inglis memorial), 738; pensioners and hospital treatment (P.I.), 423
Scudder, Charles, on the operative treatment of recent fractures, 809
Seaham Hall as sanatorium, 479
Seamen's Hospital Society, work of, 680, 707
Secrecy, professional (A.), 142; (M.L.), 308
Sedoval, Elixir (Roberts and Co.), 114, 322
Sellors, T. B., Carbonic acid snow applicator (N.I.), 496
Seminal tract, chronic infections of the (A.), 456
Senility and crime, 394
Sensation, The Basis of (E. D. Adrian) (R.), 1127
Sepsis, pre-operative inoculation against, 466
Serums, disalbuminised, against diphtheria and tetanus, 466
Service hospitals, coördination of (P.I.), 475

SERVICES, THE.—Appointment of hon. physician and hon. surgeons to the King, 266—Army Dental Corps, 823—Colonial medical services, 103, 353, 625, 787, 1029, 1240—Deaths in the services, 103, 161, 207, 312, 409, 460, 518, 577, 1146—Indian Medical Service, 40, 103, 161, 207, 266, 353, 460, 518, 577, 625, 674, 823, 870, 944, 980, 1146, 1190, 1240, 1305, 1353; commissions in, 207; new rules, 1028; reorganisation of (A.), 1025—Naval Medical Compassionate Fund, 267, 1029—Royal Air Force, 40, 161, 207, 266, 312, 353, 409, 460, 625, 674, 727, 787, 823, 870, 944, 980, 1029, 1102, 1146, 1190, 1240, 1305, 1353—Royal Army Medical Corps, 40, 103, 161, 207, 265, 312, 353, 409, 460, 518, 577, 625, 674, 727, 787, 823, 870, 944, 980, 1029, 1102, 1146, 1190, 1240, 1305, 1353; commissions in the (C.), 108, 155, 262, 518, 1353—Royal Naval Medical Service, 40, 103, 161, 207, 265, 312, 409, 460, 518, 577, 625, 727, 870, 944, 1029, 1102, 1146, 1190, 1240, 1305, 1353—Royal Naval Volunteer Reserve, 980—Royal Visit to military hospital, 674—Small-pox leave restrictions, 577—Territorial decoration, 1029—Tubercle in the services (C.), 1200
Severn, A. G. Millott, and Evans, Ewart W., A localised outbreak of bacillary dysentery in Smethwick, 126
Sewell, Lindley, Cicatricial stenosis of the œsophagus, 1008
Sex education (A.), 615
Sexual Reform, World League for, 1209
Shackle, J. W., A note on night terrors, 287
Shaw, Fletcher, on the value of drainage in Wertheim's hysterectomy, 1177
Shaw, J. J. M., Hæmangioma, 69
Shaw, Wilfred, on ovulation and the menstrual cycle, 658
Shearer, D. F., The apparent increase of cancer, 204, (C.), 263; Further note on the recorded increase of cancer, 1225
Sheffield Hospital Sunday Fund, 203; penny-in-the-pound scheme, 680
Sherrington, Sir Charles, on William Harvey, 1034
Shipwrecked individuals, observations concerning preservation of life in (J. Argyll Campbell and Leonard Hill), 42
Shops (Hours of Closing) Bill (P.I.), 732
Shuttleworth, death of Dr. George E. 1135; (O.), 1203
Sicard, J. A., on injection treatment of varicose ulcers, 1073
Sickle-cell anæmia (A.), 614
Sickness and age (A.), 612
Sickness assurance, compulsory, in all countries, review of, 462
Sidney Rawson Wilson Memorial Prize, 425
Silicosis, conference on, 109
Silver-arsenic compound, a non-irritating (Harold O. Long), 964
Silver nitrate in the eye (A.), 716
Silverstone, J., Case of cystic pneumatosis of the bowel, 129
Sinusitis, chronic, familial infectivity of, 1175
Skimmed milk and rickets (P.I.), 528
Skin, cancers of the, treatment of (Louis Savatard) (M.T.T.), 823; colour of the (A.), 923; Diseases: Histobiologie der Haut (Joseph Kyrle) (R.), 1128, X Ray and Radium in the Treatment of (George M. Mackee), 2nd ed. (R.), 136; grafts, new method of cutting large (R. Lane Joynt) (N.I.), 816
Sleeping sickness in Mozambique (P.I.), 937
Slot, Gerald, on pain in its medico-legal aspects, 656
Sluder, Greenfield, Nasal Neurology, Headaches and Eye Disorders (R.), 30
Slum-clearance schemes (P.I.), 373, 676, 1152, 1253, 1255, 1306, 1356
Small-pox among casuals (P.I.), 937; among vagrants (P.I.), 734, 938, 1358; and alastrim, 307; and vaccination (P.I.), 475; contacts, isolation of pauper (P.I.), 527; deaths from (P.I.), 526, 577; fatality-rates of, death registration and (C.), 105, in vaccinated and unvaccinated (C.), 159, 208, 313; hospital accommodation (P.I.), 735; hospitals, use of, as tuberculosis sanatoriums (P.I.), 1152; in Aspull and Hindley areas (P.I.), 474; in England and Wales (P.I.), 475, 1358; in London (P.I.), 892
Smith, Arthur B., and Sydney M., Illuminators for operative radium work (N.I.), 1286
Smith, A. Hayes, Acute Aplastic Anæmia (R.), 1285
Smith, Bellingham, on treatment of ulcerative colitis, 858
Smith, G. Elliot, on the new vision, 969
Smith, G. S., and Ashby, Hugh T., Chloroma: a study of three cases, 1169
Smith, H., on early state of cataract and its diagnosis, 860
Smith, Kenneth R., Note on squint cured by sight exercise, 182
Smith, Maynard (O.), 629
Smith, R. Travers, on the origin and diagnosis of functional cardiac murmurs, 341
Smoke abatement (P.I.), 632
Smoking and the stomach (A.), 39
Snapper, I., on rôle of the kidney in non-renal disorders, 911
Snell, E. H., Investigation of maternal mortality (C.), 885
Snow, the (A.), 39
Snuff, lead poisoning from, 585
Soames, Katharine Marjorie, and Clare, Joan L. L., Relative content of the fat-soluble vitamins A and D in a series of cod-liver oils, 150
Social hygiene, lectures on (C.), 836; Summer School, 424
Social services, cost of (P.I.), 373
Social Welfare Fortnight, International, 1311

SOCIETIES, MEDICAL.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.—Basal metabolism in clinical medicine, 814
BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.—Blandy, Mary, trial of, 291; gastric ulcer, 83; myopia in childhood, 1014; radium rôle of, in cancer of breast and tongue, 554
BUXTON MEDICAL RESEARCH SOCIETY.—Auricular fibrillation, treatment of, 657
CALEDONIAN MEDICAL SOCIETY.—Jubilee celebrations, 376
CAMBRIDGE MEDICAL SOCIETY.—Demonstrations and cases, 236; varicose veins, treatment of, by injection, 236
EDINBURGH MEDICO-CHIRURGICAL SOCIETY.—Anæsthesia in high abdomen operations, 397; fæces, unrecognised toxic substances in human, 174, 236; forceps delivery, reduction of, as basis for prophylactic gynæcology, 450; pneumonia in childhood, clinical and pathological demonstration, 397
EDINBURGH OBSTETRICAL SOCIETY.—Ovulation and the menstrual cycle, 658; puerperal hæmorrhage, three cases of, 292; puerperal sepsis, maternal mortality from, 1178; vulvo-vaginitis, 291
FEDERATION OF MEDICAL AND ALLIED SERVICES.—Council of Industrial Medicine, meeting of, 497
HARVEIAN SOCIETY OF LONDON.—Buckston Browne prize, subject for, 375; clinical meeting, 529; colitis, ulcerative, treatment of, discussion on, 857; toxicology and its application to medical practice, 603
HUNTERIAN SOCIETY.—Hiccup, discussion on, 604; Hunterian bicentenary: conversazione, 424; festival dinner, 367; Hunterian oration by Dr. Anthony Feiling, 449, by Dr. Howard Kelly, 134; programme, 57
JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.—Colon, carcinoma as applied to the, 58
LIVERPOOL MEDICAL INSTITUTION.—Diverticulitis, surgical treatment of, 396; fracture reduction, ritual of, 80; presidential address, 164; rheumatism in childhood, detection and cure of, 190; statistics, 190
MANCHESTER MEDICAL SOCIETY.—Arthritis, chronic, ætiology of, discussion on, 395; colloidal lead, 706; gastric and duodenal ulcers, series of 183 consecutive cases, 706; ophthalmology in relation to general medicine, 83
MANCHESTER PATHOLOGICAL SOCIETY.—Annual meeting, 1073; blood pressure, high, 396; breast, normal, and abnormal states of connective tissue of, 707
MEDICAL SOCIETY OF LONDON.—Cancer of cervix, treatment of, discussion on, 652; carrier problem, the, 553; dinner, 633; pernicious anæmia, treatment of, discussion on, 185; programme of spring session, 58; ultra-violet light therapy, use and abuse of, discussion on, 392
MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.—Antenatal treatment of gonorrhœa, discussion on, 757; antenatal treatment of syphilis, discussion on, 232; gonorrhœa in pregnancy and the puerperium, 501; Kahn reaction, clinical aspects of, 971; syphilis, relation of, to malignant changes, 1013
MEDICAL WOMEN'S FEDERATION.—Gastric secretion and other digestive factors in rosacea, 290; radium treatment of uterine cancer, 759
MEDICO-LEGAL SOCIETY.—Drunkenness and civil and criminal responsibility: a study in comparative law, 235; pain in its medico-legal aspects, 656; parturition, influence of, upon insanity and crime, discussion on, 379, 447

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—Anus, imperforate, 1177; cancer of cervix, cystoscopy in, 759; exhibition of cases and specimens, 340, 605; hæmatometra associated with tuberculosis, three cases of, 82; hydrops tubæ profluens, 82; isthmial pregnancy, ruptured, 82; placenta accreta, case of, 1177; vulva, pseudo-elephantiasis of, 82; Wertheim's hysterectomy, value of drainage in, 1177

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—Asthma syndrome, pathological mechanism of the, 288

OPHTHALMOLOGICAL SOCIETY.—Annual congress, proceedings at, 859, 967

PATHOLOGICAL SOCIETY OF GREAT BRITAIN AND IRELAND.—Meeting, 80

ROYAL ACADEMY OF MEDICINE IN IRELAND.—Bone pegs, 81; bronchiectasis, a case of, 238; fracture, ununited, 82; obstetric practice at the Rotunda, 969; Pepys, medical references in, 680; psychoneurosis, a case of, 237; sensitive child, the, 237; spinal caries, 81; sternum, typhoid infection of, 81; vitamin-A deficiency in Newfoundland, 969

ROYAL INSTITUTE OF PUBLIC HEALTH.—Abortion, criminal, 551; Insane and mentally defective, present state of the care of, 515; Medical practitioner in relation to the administration of justice, 183; programme of lectures, 57; Psychiatry, forensic, problems in, 394; Whitsuntide visit to Paris, Aix, and Vichy, 1342

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION.—Annual meeting, 1360; cardiac disease, mental state in, 501; globus pallidus, histology of the, 500; meeting, 318, 500; psychiatry, the new, 1074

ROYAL SOCIETY OF MEDICINE.—Achalasia and degeneration of Auerbach's plexus, 1174; alcoholism, ætiology of, discussion on, 704; anæmia, aplastic, 1123; anæsthesia in obstetrics, discussion on, 498; appendicitis in children, chronic, discussion on, 444, 595; carbon dioxide thermo-saline springs, 546; cardiac infarction, discussion on, 188; diathermy in relation to circulatory disturbances, discussion on, 187; dysmenorrhœa from calcification of ovary, 1282; dysphagia due to pharyngeal paralysis, 1174; ear, internal, vasomotor affections of, 1176; eclampsia, standard of results in the treatment of, 1281; encephalitis lethargica, later phases of, discussion on, 912; ocular complications of, discussion on, 339; fractures, operative treatment of recent, discussion on, 808; hæmorrhage, post-operative, 1174; hare lip, 1227; influenza ear, the, 1177; kidney, rôle of, in non-renal disorders, 911; larynx, intrinsic cancer of, operated through a laryngo-fissure, 1175; lysozyme, the antibacterial body, 1228; middle-ear disease, effects of on efficiency in civil and military life, discussion on, 812; narcolepsy, discussion on, 550; naso-oral sepsis, influence of, on lungs and gastro-intestinal tract, discussion on, 130; naso-pharyngeal epidemics in public schools, 1329; osteomyelitis, acute, treatment of, 499; otosclerosis, pathology of, 1176, a working hypothesis for research in, 1175; programme, 57; radium therapy, present position of, 602; reception at, 132; rectum and colon, early diagnosis of cancer of, discussion on, 1124; rheumatism, juvenile, some public health aspects of, 446; sinusitis, familial infectivity of chronic, 1175; tooth, the pulpless, discussion on, 654; tracheotomy, silent, signification of, 1175; typhoid fever in the Royal Navy, epidemiology of, 393; varicose ulcers, treatment of, by injection of sclerosing solutions, discussion on, 1073; visit of surgical section to Canada and the United States, 309; vulval metastases from pelvic growths, 1283; widening of scope of, 943

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE.—Dinner, 1348

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS.—Meeting, 133

SOCIETY OF MEDICAL OFFICERS OF HEALTH.—Diphtheria, control of, in institutions, discussion on, 965; food, recent advances in knowledge of, discussion on, 184; programme, 58, 214; tuberculosis mortality, causes of decline in, discussion on, 858

TUBERCULOSIS SOCIETY.—Care committees and kindred agencies, work and aims of, discussion on, 233

ULSTER MEDICAL SOCIETY.—Annual general meeting, 1155

WEST KENT MEDICO-CHIRURGICAL SOCIETY.—Cardiac murmurs, functional, origin and diagnosis of, 341

WOLVERHAMPTON AND DISTRICT CLINICAL CLUB.—First general meeting, 680

Society of Apothecaries of London, Diplomas granted, 679, 1205, 1359, livery dinner, 58; pass-lists, 267, 478, 679, 942, 1205, 1359

Society for Relief of Widows and Orphans of Medical Men, annual meeting (A.), 1206

Solarium treatment in South Africa (L. E. Hertslet), 771

Solis-Cohen, S., and Githens, T. S., Pharmacotherapeutics (R.), 1286

Solomons, Bethel, on obstetric practice at the Rotunda Hospital, 969

Somerford, A. R., A method of treating lupus vulgaris, 1173

Souper, H. Ross, Aural systemic infection (C.), 55

SOUTH AFRICA, CORRESPONDENCE FROM.—Bilharzia in the Transvaal, 257—Carnegie Corporation grants for scientific research, 257—Dengue in Durban, 256—Medical Congress, 775—Medical practice by the qualified and unqualified, 464—Mosquito problem, 775—Plague, 776—Port Natal Health Officer, retirement of, 257

South Africa, public health of, 670; solarium treatment in (Lewis E. Hertslet), 771

Southam, A. H., Treatment of ileus following operations (M.T.T.), 41

Southport, M.O.H.'s report, 1092

Spanish review of medical literature, a, 586

Spence, J. C., Liver treatment of pernicious anæmia, 878

Spencer, Herbert, History of British Midwifery from 1650 to 1800; Fitz-Patrick Lectures (R.), 29; Marvellous Montpellier midwifery (C.), 1250; on recent advances in treatment of cancer of cervix, 652

Spencer, Walter G., The present position of the voluntary hospitals (C.), 314

Spermatozoa, the storage of (A.), 976

Spilsbury, Sir Bernard, The work and responsibilities of the pathologist, 1362

Spinal caries, results of treatment of, 81

Spinal cord, tumours of the (Alex. Mills Kennedy and Lambert Rogers), 225

Spine, tuberculous disease of, in young children, note on treatment of (L. S. Fry), 600

Spinners' cancer (M.L.), 308

Splenic anæmia, *see* Anæmia, splenic

Splenomegaly associated with aspergillosis (A.), 767; (C.), 933; due to a fungus (A.), 1237

Spokes, Sidney, Gideon Algernon Mantell (R.), 761

Squint, concomitant (A.), 920; cured by sight exercise (Kenneth R. Smith), 182

Squires, H. C., Toxic symptoms from plasmochin (C.), 673

Stafford, M.O.H.'s report, 1300

Stalker, James M., The auscultatory gap (C.), 987

Stallybrass, C. O., Fatality-rates of smallpox in the vaccinated and unvaccinated (C.), 313; Tonsillectomy and rheumatism (C.), 786, 884

Standard Methods (Augustus B. Wadsworth) (R.), 762

Standardisation of remedies (A.), 508

Staphylococcal pyæmia, case of acute (S. Deaner), 391

Statistical method in practical medicine, value of (Percy Stocks), 1242

Statistics, medical (L.A.), 1233; with some observations, 190

Status lymphaticus (L.A.), 1077

Steadman, F. St. J., Pyorrhœa alveolaris (R.), 239

Stephens, G. Arbour, The auscultatory gap (C.), 987; Disease in the West Indies (C.), 730

Stereofluoroscopic work, Note on the latest development of (F. Howard Humphris), 442; (C.), 626, 673

Sterilisation and mental disease (A.), 864

Sternum, typhoid infection of the, 81

Stevens, A. A., Text-book of Therapeutics, 7th ed. (R.), 137

Stewart, J. N., on intestinal tuberculosis, 723

Stilwell, Dr. R. J., appointed a J.P., 425

Stimulus in economic life (A.), 563

Stitt, E. R., Practical Bacteriology, Blood Work and Animal Parasitology, 8th ed. (R.), 31

Stocks, Percy, Inquiry into the ætiology of cancer (C.), 1250; On the value of the statistical method in practical medicine, 1242

Stomach, colloid cancer of the (A.), 508

Stone, J. E., Hospital law: liability for torts, 895

Stopford, J. S. B., and Hutchinson, R. C., Case of facial neuralgia associated with pulmonary abscess, 494

Stowmarket, M.O.H.'s report, 1352

Strain, violent exercise in relation to the possibility of (A. Abrahams), 429

Streptococcal infections, hæmolytic, in rabbits, 746; treatment of, with arsenical compounds (A.), 509; two studies of (H. J. Parish and C. C. Okell), 746

Streptococci and Diphtheroids: Annals of Pickett-Thomson Research Laboratory (R.), 30

Streptococcus cardio-arthritidis (A.), 1291

Streptothrix organism, splenic anæmia due to (John Fawcett and A. G. Gibson), 1171

Stroganoff, B., on the standard of results in the treatment of eclampsia, 1281

Strümpell's Lehrbuch der speziellen Pathologie und Therapie der inneren Krankheiten, 26th ed. (R.), 137

Stuart, Dr. Alex., death of, 376

Students, medical, registration of (L.A.), 34

Submarine, sunken, invention of rescue apparatus by Dr. Bini, 1054

Sulphostab (Boots Pure Drug Co.), 322

Sulphur, use of, in barley milling (P.I.), 937, 1306

Sunday Trading Bill (P.I.), 937

Sunlight and health (A.), 1079; seasonal variations in the antirachitic value of (A.), 715; Artificial, and its Therapeutic Uses (F. Howard Humphris), 4th ed. (R.), 709; in modern medicine, 1054

Superstition in Sussex, 792

Surgery, Nelson Loose-leaf Living (ed. Allen O. Whipple), Vols. I.–IV. (R.), 1283; Yesterday and to-morrow (Sir Berkeley Moynihan), 1207; (C.), 1260, 1312

Surgical Methods, Exposures of Long Bones and Other (Arnold K. Henry) (R.), 294

Surrey County Sanatorium, 1360

Sussex Provident Scheme, 352

Swedish Medical Gymnastics, Technique of (J. Arvedson) (R.), 1127

Swindon, M.O.H.'s report, 1093

Swiney Prize for medical jurisprudence, 679

Swinton, Lt.-Col. F. E., death of, 103

Swiss climates (C.), 896; Red Cross officials, 737; tour, a (A.), 94

Sydenham, Frederick W., and Lamb, William, Practical Guide to Diseases of the Throat, Nose, and Ear, 5th ed. (R.), 84

Synthalin, 482; importation of, 162

Syphilis, antenatal treatment of, discussion on, 232; bismuth therapy in (C. Levaditi and L. Fournier), 692; early, effect of acetylarsan in (V. E. Lloyd), 1320; Die malariatherapie der (Joseph Matuschka and Rudolf Romer) (R.), 344; in relation to ætiology and diagnosis of malignant disease, 1013; Principles and Practice of Chemotherapy, with special reference to (John A. Kolmer) (R.), 556; salvarsan in late, 516; serum tests for (A.), 510; of aorta, diagnosis and prognosis of, 154; of uterus, case of (Hannah Billig), 443

Syphilitic phlebitis, acute (A.), 1080

T

Talbot, F., Multiple dental extractions (C.), 990
Tannic acid, treatment of burns by (R. M. Gordon), 336; (A.), 351; (C.), 519
Taste, acid, perception of, 1311
Tavistock Clinic, the (A.), 199
Taylor, J. Maxwell, The Game of Health (R.), 482
Taylor, Shephard, T., Diary of a Medical Student during the mid-Victorian Period (R.), 504
Taylor, W. Alfred, An unusual case of appendicitis, 857
Taylor's Medical Jurisprudence, 8th ed. (ed. Sidney Smith and W. G. H. Cook) (R.), 1126
Tea duty, the (P.I.), 1356
Teeth, mal-occluded, treatment of (A.), 349
Tenterden paratyphoid epidemic (C.), 106
Tessol, 791
Test-meal analysis, fractional (Jocelyn Patterson), 492
Test-meals, fractional: analysis of 160 consecutive results (Lucy Wills), 825
Tetanus, 154; a case of (S. Berman), 286; (S. M. Power), 910; post-operative, in Scotland (A.), 1187
Tetrachlorethane, poisoning by, 114
Tetra-ethyl, *see under* Lead tetra-ethyl
Thacker-Neville, W. S., Indications for tonsillectomy (C.), 1095
Thedwastre, M.O.H.'s report, 1352
Therapeutics, Text-book of (A. A. Stevens), 7th ed. (R.), 137
Thermometer, Simplex aseptic clinical, 1311
Thilocologne, 378
Thomas, the late Dr. Raglan, 529
Thompson, Mehrack, The Springs of Human Action (R.), 915
Thomson, A. P., Liver treatment of pernicious anæmia, 876
Thomson, D. and R., editors, Annals of the Pickett-Thomson Research Laboratory, Vol. II., No. 2, and Vol. III. (R.), 30
Thomson, Dr. John, memorial to (C.), 209
Thomson, Sir StClair, foreign honours for, 1203; on intrinsic cancer of larynx operated through a laryngo-fissure, 1175; on lupus and its treatment, 721
Thomson, Torrance, on anæsthesia in high abdomen operations, 397
Thoracopagus, a case of a (C. Vincent Patrick), 282
Thoracoscopy: Atlas Thoracoscopicon (Felix Cova) (R.), 503
Thorakoskopie, Lehrbuch und Atlas der Laparo- und (Roger Korbsch) (R.), 329
Thornhill, Ronald, Injection treatment of varicose veins (C.), 934
Thorp, Eustace, Influenzal pneumonia or enterica (C.), 371
Thorp, Linton, and Watson, A. Aiken, The Law of Moneylending (R.), 710
Thorpe, Frederick T., Case of spontaneous rupture of the thoracic aorta, 756
"Those other practitioners" (A.), 244
Throat, Nose, and Ear, Diseases of the (Dan McKenzie), 2nd ed. (R.), 84; Practical Guide to Diseases of the (W. Lamb and F. W. Sydenham), 5th ed. (R.), 84
Thyroid, active substances of the (A.), 866; function, menstruation and (A.), 92; gland, relation of, to nasal mucous membrane, 998
Tic, Treatment of (W. Russell Brain) (M.T.T.), 1295
Tidy, H. Letheby, on treatment of ulcerative colitis, 857, (C.), 1096
Tissue culture: Gewebezüchtung (Albert Fischer) (R.), 294
Tobacco angina (A.), 978
Tobacco, toxicology of, 50
Tonsil dissector, new form of (T. B. Jobson) (N.I.), 916
Tonsillectomy and rheumatism (L.A.), 713; (C.), 786, 835, 884; indications for (C.), 1095
Tonsils, surgical diathermy of (A.), 1135
Tooth, the pulpless, discussion on, 654; the wisdom, impaction of (A.), 1134
Toothbrush, Kem-Dent sterile, 740
Torquay, M.O.H.'s report, 1351
Tottenham, Richard E., Aids to Gynæcology, 7th ed. (R.), 709
Toxicology and its application to medical practice, 603
Tracheotomy, silent, signification of, 1175
Traffic accidents, children and (P.I.), 422
Travancore, medical work in, 1364
Travaux et Mémoires (Pierre Marie), 2nd vol. (R.), 1285

TREATMENT, MODERN TECHNIQUE IN.—Aneurysm (T. F. Cotton), 1029—Bladder, cancer of the (J. Swift Joly), 1136—Bronchiectasis (F. G. Chandler), 1084—Cancers of the skin (Louis Savatard), 823—Carpus, commoner injuries of the (E. Muirhead Little), 870—Cerebral paralyses, infantile (Neill Hobhouse), 409—Dermatitis, occupational (non-malignant) (W. J. O'Donovan), 719—Diverticulitis of the Colon (C. W. Gordon Bryan), 512—Epididymitis, tuberculous (R. H. O. B. Robinson), 95—Head injuries (Hugh Cairns), 567, 617—sequels of (W. Russell Brain and Hugh Cairns), 668—Headache in children (R. C. Lightwood), 770—Ileus following operations (A. H. Southam), 41—Impotence (Kenneth M. Walker), 250—Lichen planus (Arthur Whitfield), 352—Menstrual life, early, disturbances incidental to (Alice E. S. Clow), 460—Nasal obstruction, minor degrees of (Philip Jory), 146, 200—Onychia (A. M. H. Gray), 1340—Pleurisy (L. S. T. Burrell), 304—Rickets (Helen M. M. Mackay), 923, 979—Tic (W. Russell Brain), 1295—Varicose veins, ambulatory treatment of (Reginald T. Payne), 1189, 1240

Trendelenburg position, frame for the (Cecil Hughes) (N.I.), 1332; note on the (R. Ogier Ward), 650
Trial frame for retinoscopy (John Parry Price) (N.I.), 344
Trial of S. H. Dougal, ed. F. Tennyson Jesse (R.), 1180
Tricalcine (Wilcox, Jozeau et Cie.), 428
Tropical Medicine, Recent Advances in (Sir Leonard Rogers) (R.), 1230
Tropics, education of medical officers for service in the (Andrew Balfour), 63, 117; life insurance in the (A.), 299
Trotter, Mr. Wilfred, appointed Hon. Surg. to the King, 769
Trypanosomiasis, treatment of, 1041
Tuber cinereum and its functions (A.), 869
Tubercle bacilli, bovine type, from sputum in pulmonary tuberculosis (W. T. Munro and A. Stanley Griffith), 384, in bovine fæces (A.), 245
Tubercle in the services (C.), 1200
Tuberculin, crystallised (A.), 143
Tuberculose chez l'homme et chez les animaux, L'infection bacillaire et la (A. Calmette and others), 3rd ed. (R.), 1332; Médicale de l'Enfance, La (M. Péhu and A. Dufourt) (R.), 1285; pulmonaire: Tuberculose des Séreuses (Pierre Pruvost) (R.), 1021
Tuberculosis, alleged delay in notifying (M.L.), 1040; among school-children in Vienna, 47; and employment (C.), 1096; antituberculosis schemes, 311; benzyl cinnamic ester in (H. Gainsborough), 908; biological reactions in, 1041; blood in (A.), 976; care committees and kindred agencies, discussion on, 233; conference, Easter, 566, at Oxford, proceedings, 721; conjugal (A.), 406; contributions to the Study of (Nat. Jewish Hosp. at Denver) (R.), 557; Council, Joint meeting of, 312, 1240, courses in (A.), 1185; demonstration in Sweden, the "Helsan," 636; in the Air Force (P.I.), 475; in the Army and Navy (P.I.), 474, in the Navy (P.I.), 674; (C.), 987, in England and Wales (P.I.), 937; in monkeys (A.), 198; innate resistance to (A.), 920; intestinal, discussion on, 723; minor (E. Ward), 125; Modern Aspects of Diagnosis, Classification and Treatment of (J. Arthur Myers) (R.), 1126; mortality, causes of decline in, discussion on, 858, decline in, in Lancashire, 1054; pulmonary, *see* Pulmonary tuberculosis; of spine in young children, treatment of (L. S. Fry), 600; on Tyneside (L.A.), 662; prognostic tests in (B. L. McFarland), 804; Schemes for Great Britain and Ireland, Handbook of, 667; survey among school-children (A.), 145; three conceptions of (C.), 259, 470; treatment, cost of (P.I.), 1307; La vaccination préventive contre la tuberculose par le "B.C.G.," 84; Villemin and the elimination of, 270
Tuberculous child, the potentially, discussion on, 722; children, institutional treatment of (P.I.), 1152; epididymitis (R. H. O. B. Robinson) (M.T.T.), 95; infection in infancy (A.), 459; peritonitis in children, prognosis of (A.), 348; persons, the employment of (A.), 246; (C.), 469, 520
Tularæmia, 50; human autopsy, 1143; in mice, 623; risks of, 113
Tumours, appeal for spontaneous (C.), 886; A Treatise on (James Ewing), 3rd ed. (R.), 659
Tunbridge Wells hospitals, 634
Turnbull, Hubert M., and McIntosh, James, Encephalo-myelitis following vaccination (C.), 1094
Turner, A. Logan, editor, Diseases of the Nose, Throat, and Ear, 2nd ed. (R.), 84
Turner, J. G., on influence of naso-oral sepsis on lungs and gastro-intestinal tract, 131
Turner, K., Gonorrhœal urethritis in young children (C.), 158
Turner, Terence W., Venables, J. F., and Hurst, A. F., The early diagnosis of cancer of colon and rectum, 1275
Twins, conjoined, two cases of (C. Vincent Patrick and H. C. Cameron), 282
Twins and Orphans (A. H. Wingfield) (R.), 659
Twort, C. C., and Ing, H. R., Mule-spinners' cancer and mineral oils, 752
Two-shift system, the, 740
Typesetting, illumination for hand, 378
Typhoid fever in children (A.), 143; in the Royal Navy, epidemiology of, 393
Typhus of anomalous type, two cases of (Alan Randle and Charles Marian), 1224

U

Ultra-violet light and Unna's paste treatment of varicose ulcers compared (Dora C. Colebrook), 904; (C.), 1302; therapy, use and abuse of, discussion on, 392; radiation in the treatment of pemphigus neonatorum (A. W. Gregorson), 703; rays and varicose ulcers (C.), 471, in the Treatment and Cure of Disease (Percy Hall), 3rd ed. (R.), 85, influence of, on industrial output (A. Lisle Punch, Russell Wilkinson, R. StC. Brooke, and C. S. Myers), 1120; treatment at public baths, 418, 986
Unger, W., Neurologie: Praktische Differentialdiagnostik für Ärzte und Studierende (R.), 1021

UNITED STATES OF AMERICA, CORRESPONDENCE FROM.—Carbon monoxide as an industrial hazard, 881—"Chiropractic is doomed," 732—Cold, the common, 370—Coolidge tube, the new, 1042—Copper salts in anæmia, 1042—Criminal procedure, suggested revolution in, 623—Funerals, the cost of, 623—Infantile paralysis, artificial respiration in, 101—Invention for localisation of metallic foreign bodies, 732—Leprosy, painless treatment of, 101—Marriage and divorce, 50—Mayor Thompson rebuked, 671—Measles, reducing mortality from, 671—Medical care, cost of, 1298—Midwives, position of, 49—Mouse sarcoma, destruction of, by high-frequency currents, 1143—Narcotic education, 307—News items, 50, 1143—Newspaper medicine, 370—Prohibition, Christmas under, 101—Research defence, 1042—Research Foundation, a new, 732—Schistosome dermatitis, 1042—Small-pox and alastrim, 307—Spray coating, 370—Tobacco, toxicology of, 50—Tularæmia, 50, human autopsy, 1143, in mice, 623—Vital statistics of negro community, 623—Vitamins, recent research on the, 881

University College Centenary Addresses (R.), 294

UNIVERSITIES.—University of Aberdeen, appointment of Dr. J. J. R. Macleod to Chair of Physiology, 823; degree of LL.D. for Emer. Prof. McWilliam, 633; degrees and diplomas conferred, 737; nomination of Chancellor, 892—University of Birmingham, gift of land to, 479; lectures at, 838—University of Bristol, pass-lists, 1258—University of Cambridge, appointments, 1205, 1257; degrees conferred, 266, 995, 1205; pass-lists, 838, 942, 1359—University of Dublin, honorary degree for Sir

John Bland-Sutton, 680; pass-lists, 633—University of Durham, pass-lists, 789, 1359—University of Edinburgh, appointments 479, 1203; honorary degrees conferred, 679—University of Glasgow, degrees conferred, 893; honorary degrees, 1051, 1360; prizes, 893—University of Hong-Kong, congregation, 583—University of Ireland, National, appointment, 634—University of Liverpool, pass-lists, 161, 679—University of London, annual report on work, 1050; appointment of representative on G.M.C., 249; appointments and awards 267, 582, 679, 1103, 1360; degrees conferred, 318, 679; diplomas granted, 942; King's College, lectures at, 110; meeting of Senate 57, 267, 478, 582, 679, 776, 1103; news items, 374; parliamentary representative, 478; pass-lists, 110, 942, 1257; prizes and grants, 886; programme of lectures, 776, 942; public health, new chair of (L.A.), 195; scholarship examinations, 1155; University College, lectures at, 110, 162, 838; women undergraduates and medical education, 679—University of Manchester, appointment of Pro-Vice-Chancellor, 162; award of scholarships, 679; pass-lists, 679—University of Oxford, appointments, 680; degrees conferred, 478, 737, 995, 1257; election of Sir Farquhar Buzzard to honorary Fellowship of Magdalen, 1155; election of Dr. F. A. Dixey to Emeritus Fellowship of Wadham, 266; fellowships, elections to, 633; G. H. Hunt scholarship, award of, 789; Radcliffe prize, 1360—University of Paris, Easter holiday course, 375—University of St. Andrews, honorary degrees, 737—University of Sheffield, centenary of medical school, 1155; honorary degrees conferred by, 1360; pass-lists, 161, 995—University of Vienna, intensive post-graduate course, 375—University of Wales, pass-lists, 214

University of London Animal Welfare Society, 1104
University of London Graduates' Association, meeting of council, 996
Urinary retention of prostatic origin, treatment of, by electro-coagulation (J. G. Remijnse), 750
Urinary tract, purpura of (Frank Kidd), 897; (L.A.), 917
Urology and Syphilology, Practice of (Charles H. Chetwood), 4th ed. (R.), 1332
Urticaria, treatment of, with alkalis (A.), 1026
Usher, C. Howard, on relationships between animals' eyes and human ophthalmology, 859
Uterine fibroids, case of multiple, with torsion of one pedicle, 340
Uterus, cancer of the (A.), 145; operative treatment of (A.), 1291, radium treatment of, 759, reduction of mortality, 46; of body of, after interposition operation for prolapse, 606, intermittent periodic pain as a symptom of, 606; inversion of, unusual case of (C. L. Lander), 182; syphilis of the (Hannah Billig), 443

V

Vacancies, weekly lists of, 59, 112, 163, 215, 269, 320, 377, 426, 480, 530, 584, 635, 681, 738, 791, 839, 945, 997, 1053, 1105, 1157, 1206, 1258, 1310, 1361
Vaccination, compulsory (P.I.), 1100; death after (M.L.), 570; encephalomyelitis following (C.), 1094, 1201, 1250; statistics (P.I.), 1255
Vaginal vault, atresia of, causing dystocia, case of, 341
Vagotonies, Sympathicotonies, Neurotonies (A. C. Guillaume), 2nd ed. (R.), 1127
Valentine, F. C. O., and Brain, W. Russell, Case of infection of meninges and blood stream by *Bacillus mucosus capsulatus*, 855; and Panton, P. N., Liver treatment of pernicious anæmia, 872
Van den Bergh, A. A. Hymans, On porphyrin in the mouth, 281
van Leersum, E. C., Prophylaxis of rickets (C.), 1249
van Slyke, Donald D., Factors Affecting the Distribution of Electrolytes, Water, and Gases in the Animal Body (R.), 292
Varicose ulcers: comparison of ultra-violet light and Unna's paste treatment of (Dora C. Colebrook), 904; (C.), 1302; treatment of, by injection of sclerosing solutions, discussion on, 1073; ultra-violet rays and (C.), 471
Varicose veins, ambulatory treatment of (Reginald T. Payne) (M.T.T.), 1189, 1240; (C.), 1354; improved syringe for treatment of (K. M. and C. J. Cellan-Jones) (N.I.), 1022; treatment of, by injection, discussion on, 236, (Rodney Maingot and C. Hope Carlton), 806; (C.), 1045; (C.), 884, 934
Varrier-Jones, P. C., Employment of tuberculous patients (C.), 469
Vaughan, Janet, Liver treatment of pernicious anæmia, 875
Vegetarian Society, London: Arnold Hills memorial lecture, 633
Veitch, H. C. Craven, Case of polydactylism in twins, 650
Venables, John F., Hurst, A. F., and Turner, T. W., The early diagnosis of cancer of colon and rectum, 1275
Venereal disease, a film for propaganda against (A.), 247; campaign (A.), 1336, has it been a failure? (C.), 833, 882, 883, 932, 933, 989, 990, 1044; clinics, voluntary, in Scotland (P.I.), 839; control: an American view (A.), 821; Edinburgh Bill dealing with (L.A.), 454, 624, 773; (P.I.), 887; legislation against, 412; notification of, in New South Wales (A.), 1135, in Scotland (P.I.), 423; patients, defaulting (A.), 36; treatment of (P.I.), 993, legal compulsion in (L.A.), 560
Ventilation and health (A.), 664
Ventnor, M.O.H.'s report, 1093
"Venule" apparatus for blood culture, 321
Vermin, destruction of, Bill (P.I.), 526, 676
Verney, E. B., The heart-lung preparation: recent additions to our knowledge of the circulation, 1038
Vesalius and the Inquisition myth (C.), 105
Victoria (Australia), dental practice in, 267

VIENNA, CORRESPONDENCE FROM.—Brain, surgery of, 48—Conflicts in the medical profession, 1142—Doppler's method of producing hyperæmia in circumscribed regions, 467—Foreign students, 48—Goitre, decrease of, in Vienna, 466—Health statistics, Austrian, 153, Vienna (1926), 467—Statistics of practitioners in Vienna, 1142—Syphilis of aorta, diagnosis and prognosis of, 154—Tetanus, 154—Tuberculosis among school-children, 47—Voronoff's operation, 1142

Villemin and the elimination of tubercle, 270
Visceral sensations and counter-irritation (A.), 1238
Vita-glass pavilion at Stannington, 216
Vital capacity of negroes, 1363
Vital statistics for 1927 (A.), 141; of negro community in America, 623; of wealth and poverty, 427
Vitamin A, 881; content of cod-liver oils (C.), 1353; in cod-liver oil, estimation of, 148; deficiency in Newfoundland, 969
Vitamin B and the alimentary canal (C.), 263; and cell nuclei, 185; deficiency of, relation to atony of stomach (M. J. Rowlands and Ethel Browning), 180; subsistence rate of, 185
Vitamin D value of cod-liver oil (C.), 261
Vitamin assay of cod-liver oil (A.), 199; deficiency, immunity and: review of the evidence, 670; exhibit, a, 482
Vitamins, research on the, 306, 881; A and C in watercress, the content of (Katharine H. Coward and P. Eggleton), 97; A and D, fat-soluble, relative content of, in a series of cod-liver oils (Joan L. L. Clare and Katharine M. Soames), 150
Voluntary hospitals and public authorities, 251; (Sir William Hamer), 334, discussion on, 342; present position of the (C.), 53, 156, 208, 314, 372, 414, 416, 519, 626; report of Commission, 1192; revival of the (A.), 1184
Von Economo, Constantin, L'architecture cellulaire normale de l'écorce cérébrale (R.), 1230
Voronoff's grafting experiments: an official investigation (A.), 613; method of rejuvenation, 1158; operation, 1142
Vulva, pseudo-elephantiasis of, 82
Vulval metastases from pelvic growths, 1283
Vulvo-vaginitis, 291

W

Wadsworth, Augustus B., Standard Methods (R.), 762
Wage-earners' clubs, 438
Wakeley, Cecil P. G., and Gladstone, Reginald J., Relative frequency of various positions of vermiform appendix: analysis of 5000 cases, 178
Walker, G. F., Note on camptocormia, 808
Walker, Jane, on medical saints, 132
Walker, Kenneth M., Treatment of impotence (M.T.T.), 250
Waller, the late Dr. H. M., 1156
Waller, Mary D., Practical Physics for Medical Students (R.), 503
Walsh, Nathan, A case of nerve palsy, 129
Walters, F. R., The employment of tuberculous patients (C.), 520; Recurrent colds (C.), 160
Walton, A. J., Chronic appendicitis in children, 445, 595
Wandsworth scholarship for research in tropical medicine, 376
War Emergency Fund (C.), 1249
Ward, E., Minor tuberculosis, 125; nomenclature of disease (C.), 156, 264; Three conceptions of tuberculosis (C.), 470
Ward, Gordon, "Fright Disease," 316
Ward, Iris V. I., An outbreak of paratyphoid B fever, 389
Ward, R. Ogier, Note on the Trendelenburg position, 650
Waring, Sir Holburt J., on the progress of surgery from Hunter's day to ours (Hunterian oration), 323; The Surgical Treatment of Malignant Disease (R.), 607
Warren, Shields, Medical Science for Everyday Use (R.), 399
Warwickshire Memorial Sanatorium, 1156
Washburn, Homer C., and Blome, Walter H., Pharmacognosy and Materia Medica (R.), 762
Washington Hours Convention (A.), 767; (P.I.), 1152
Water: its pollution and purification (A.), 1026; The Microscopy of Drinking (G. C. Whipple), 4th ed. (R.), 659; of the Metropolis (A.), 1339
Watercress, the content of vitamins A and C in (Katharine H. Coward and P. Eggleton), 97
Water-supplies, municipal (P.I.), 526
Watson, A. Aiken, and Thorp, Linton, The Law of Moneylending (R.), 710
Watson, Douglas Chalmers, Unrecognised toxic substances in human fæces, 174
Watson, Sir Malcolm, award by Asiatic Society of Bengal to, 823
Watson-Williams, E., Paraphenylenediamine labyrinthitis, 1123
Watson-Williams, Patrick, Medico-legal research (C.), 1145; on familial infectivity of chronic sinusitis, 1175
Watters, B. D. H., Russ, S., and Clark, L. H., Physics in Medical Radiology (R.), 1076
Way, C. Berkeley, Disposal of the dead (C.), 574
Weaving, humidity and (A.), 869
Webb, Millicent V., Two consecutive abdominal pregnancies, 230
Webb-Johnson, Cecil, Diet and Disease (R.), 709
Wechsler, Israel S., Text-book of Clinical Neurology (R.), 914
Weil, Mathieu-Pierre, and Bezançon, Fernand, "The rheumatic disease," 1002
Weinbren, M., Ultra-violet rays and varicose ulcers (C.), 471, 1302
Welch, Dr. K. St. Vincent, appointment for, 1051
Wellcome research laboratories at Khartoum (A.), 196
Wells, S. M., Subcutaneous emphysema during parturition (C.), 988
Welsh Board of Health, work of, 1308 (P.I.), 1359; National School of Medicine (L.A.), 1183
Wertheim's hysterectomy, value of drainage in, 1177
Wertheimer, F. L., and Hesketh, Florence E., Significance of the Physical Constitution in Mental Disease (R.), 760
Wesleyan and General Assurance Society's health pamphlets, 1158, 1209
Wesselow, O. L. V. de, and Bamforth, J., Blood and plasma volumes in pernicious anæmia, 1066

West, R. G. R., On the protean nature of "influenza": report of a mild epidemic at sea, 337
West African Medical Staff list, 375
West Ham, M.O.H.'s report, 1299
West Indies, disease in the (C.), 730
West Surrey Hospital League, 971
Wheatley, James (O.), 528
Wheeler, Sir William, on early diagnosis of cancer of rectum and colon, 1124
Whipple, Allen O., ed., The Nelson Loose-leaf Living Surgery, Vols. I.–IV. (R.), 1283
Whipple, G. C., The Microscopy of Drinking Water, 4th ed. (R.), 659
Whitby, L. E. H., Leucocytic changes resulting from the liver treatment of pernicious anæmia, 285
White, Charles Powell, multiple malignant tumours (C.), 1200; The status of pathology, 381
White, Clifford, on vulval metastases from pelvic growths, 1283
White, E. Barton, on the histology of the globus pallidus, 500
Whitfield, Arthur, Treatment of lichen planus (M.T.T.), 352
Whyte, L. L., Archimedes or the Future of Physics (R.), 138
Wilcox, H. B., Infant and Child Feeding: Vol. XII. of Haynes' Clinical Pediatrics (R.), 1230
Wilkinson, K. Douglas, and Ogilvie, A. G., Rheumatism, tonsils, and glands, 647; (C.), 835
Wilkinson, Russell, Brooke, R. StC., Myers, C. S., and Punch, A. Lisle, Influence of ultra-violet rays on industrial output, 1120
Willcox, Sir William, Toxicology and its relation to medical practice, 603; on treatment of pernicious anæmia, 186
Willet, Edgar William (O.), 837
William Mackenzie Memorial medal, award of, 1103
Williams, Cicely D., Medical work in Yugoslavia (C.), 1144
Williams, Sir Dawson (O.), 476; memorial fund to (A.), 510, 558; 1189, 1340; testimonial to (A.), 249, 404
Williams, Dr. George Chisholm, death of, 769
Williams, Gwynne, Minor Surgery and Bandaging, 19th ed. (R.), 1022
Williams, Mary F., Rheumatic conditions in school-children, 720
Williamson, Bruce, The rational use of digitalis, 591
Williamson, C. L., and Broomhead, C. H., Treatment of obesity by ultra-violet rays, 231
Williamson, H., Anatomical nomenclature (C.), 1355; Mercurochrome intravenously (C.), 209
Williamson-Noble, F. A., on ocular complications of encephalitis lethargica, 339
Willis, retirement of Sir Frederick (L.A.), 347
Willoughby, Dr. W. M., appointed M.O.H. for City of London, 1084
Wills, Lucy, Fractional test-meals: analysis of results in 160 consecutive tests, 825
Wilson, C. M., and Langmead, F. S., Liver treatment of pernicious anæmia, 874
Wilson, Justina, on diathermy in circulatory disturbances, 187
Wilson, R. K., Ovarian hæmorrhage simulating acute appendicitis, 1221; (C.), 1303
Wilson, S. A. Kinnier, Ætiology and treatment of acute poliomyelitis, 11; on narcolepsy, 550
Wilson, T. Stacey, Tonic Hardening of the Colon (R.), 658
Wilson, William, An operation for the alleviation of deafness (C.), 109
Wines, Australian (Southard and Co.) (R. and A.R.), 344
Wingfield, Alex. H., Twins and Orphans (R.), 659
Wisdom tooth, impaction of the (A.), 1134
Wise, Alfred Thomas Tucker (O.), 678
Witts, L. J., and Florey, Howard, Absorption of blood from peritoneal cavity, 1323
Woakes, Claud, An operation for the relief of deafness (C.), 159
Wolff, E., and Davies, F., on fragmentation of retinal blood stream, 967
Wolff, René, and Gautier, Claude, Le métabolisme basal (R.), 85
Women, in the service of hospitals, 943
Women students, exclusion of, by certain London hospitals, 616; (C.), 728
Women's work during menstrual period (L.A.), 712
Wood, the late Major-General Leonard, 1210
Wood, W. Burton, Late results of pulmonary fibrosis, 596
Woods, Hilda M., on the statistical epidemiology of respiratory diseases, 539
Workmen's contributions to a hospital, 545
Workpeople's hospital funds, 516
Worseldine, S. C. H., Case of subacute combined sclerosis of cord, of sudden onset, 338
Wright, A. J., on the signification of silent tracheotomy, 1175
Wright, Samson, Vitamin B and the alimentary canal (C.), 263
Wylie, Sir James, at the Russian court, 586
Wynne, Frederick E., Fatality-rates of small-pox in the vaccinated and unvaccinated (C.), 159; relations of the public health service and the private practitioner, 172

X

X Ray and Radium in the Treatment of Diseases of the Skin (George M. Mackee), 2nd ed. (R.), 136
X Ray Photography: Kontrast und Schärfe im Röntgenbilde (Willem Bronkhorst) (R.), 502; tubes, "Metalix," 427
X rays in asthma, 946; in prostatic enlargement, 1088; X-Rays Ltd., Stereofluoroscopy (C.), 626

Y

Yates, A. Gurney, Case of cerebellar tumour, 78
Yates, Lowndes, on otosclerosis, 1175; on post-operative hæmorrhage, 1174
Yatren, importation of, 1096
Year Book of Learned Societies, 686
Yearsley, Macleod, An operation for the alleviation of deafness (C.), 158; Nasal obstruction as a cause of deafness (C.), 786; Recurrent colds (C.), 372; Sympathetic psychoneurosis, a (C.), 842
Young, James, on maternal mortality from puerperal sepsis, 1178
Young, Lieut.-Colonel A. W. Cook, the late, 623
Young, James Buchanan (O.), 736
Young, R. A., on influence of naso-oral sepsis in lungs and gastro-intestinal tract, 131
Young, Prof. Sydney, address to, 1308
Young, William Alexander (O.), 1257
Yugoslavia, medical work in (C.), 1144; through, 925; tour in, 478, 998

Z

Zara, Hospital of San Matteo, 998

CONCORDANCE

To enable the reader to determine at a glance the date and serial number of the issue of THE LANCET containing the required page reference.

Pages.	Date of Issue.	No.
1–62	Jan. 7th	5445
63–114	„ 14th	5446
115–166	„ 21st	5447
167–216	28th	5448
217–270	Feb. 4th	5449
271–322	„ 11th	5450
323–378	„ 18th	5451
379–428	„ 25th	5452
429–482	Mar. 3rd	5453
483–534	„ 10th	5454
535–586	„ 17th	5455
587–636	„ 24th	5456
637–686	„ 31st	5457
687–740	April 7th	5458
741–792	„ 14th	5459
793–842	„ 21st	5460
843–896	„ 28th	5461
897–946	May 5th	5462
947–998	„ 12th	5463
999–1054	„ 19th	5464
1055–1106	„ 26th	5465
1107–1158	June 2nd	5466
1159–1210	„ 9th	5467
1211–1262	„ 16th	5468
1263–1312	„ 23rd	5469
1313–1364	„ 30th	5470

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on the History of Epidemiology during the last Hundred Years. By Sir WILLIAM HAMER, F.R.C.P.—Lec. I. 1313

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Effect of the Prolonged Use of Insulin on Subcutaneous Tissues. By R. D. LAWRENCE, M.R.C.P. 1328

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"Astonished Infants" (Dr. G. M. Cullen) 1364

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House of Lords: Slum Clearance Schemes.—The Infanticide Bill.—Liquor (Disinterested Ownership and Management) Bill..... 1356
House of Commons: Treatment of Tuberculous War Pensioners.—Welfare of Blind Persons.—Feeding of Necessitous Schoolchildren.—Boy's Death after Vaccination.—Small-pox in England 1358

OBITUARY.
Henry Pottinger Keatinge, F.R.C.S. 1355
Archibald Mason Jones, M.D., F.R.C.S. 1355

MEDICAL NEWS.
University of Cambridge . 1359
Society of Apothecaries.. 1359
University of Durham ... 1359
Peterborough New Hosp. 1315
St. Mary's Hospital..... 1315
Foundling Hospital Site.. 1325
Lord Mayor Treloar Cripples' Hospital 1328
Donations and Bequests.. 1341
Royal Med. Benev. Fund 1355
Karlsbad Post-graduate Course 1359
Livingstone College 1359
University of Sheffield .. 1360
University of Glasgow ... 1360
University of London: University College 1360
University of Oxford 1360
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Royal Medico-Psychological Association 1360
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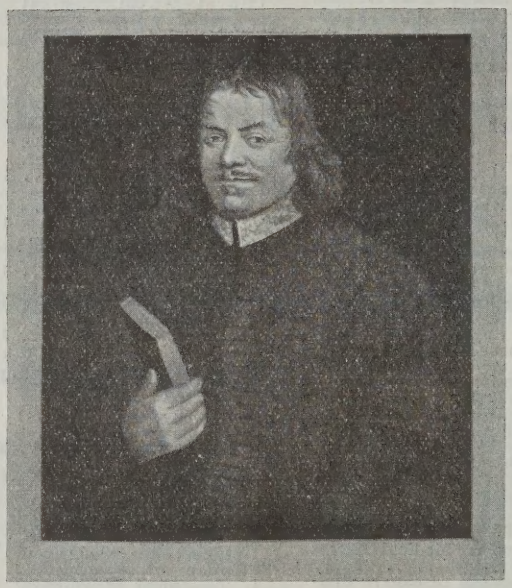

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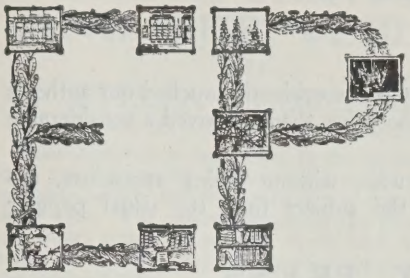

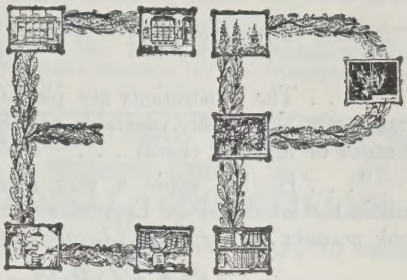

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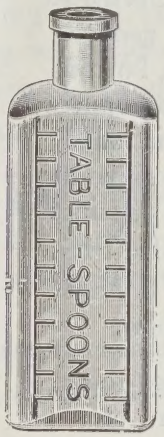

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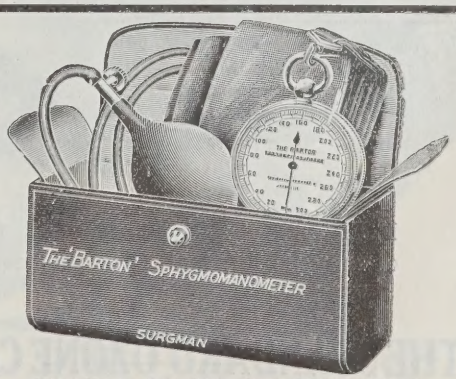

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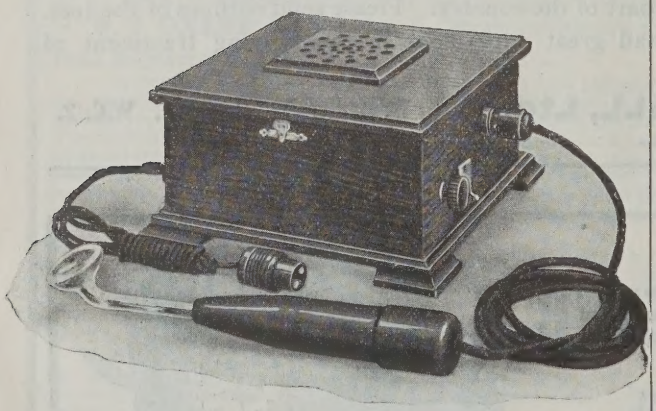

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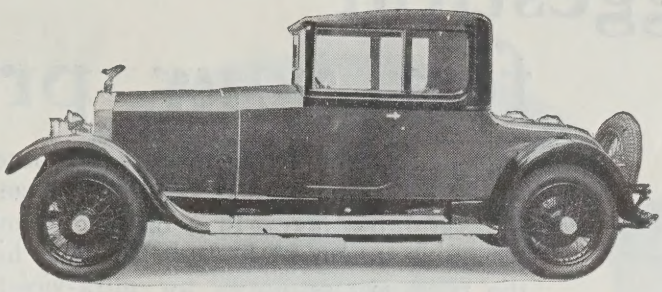

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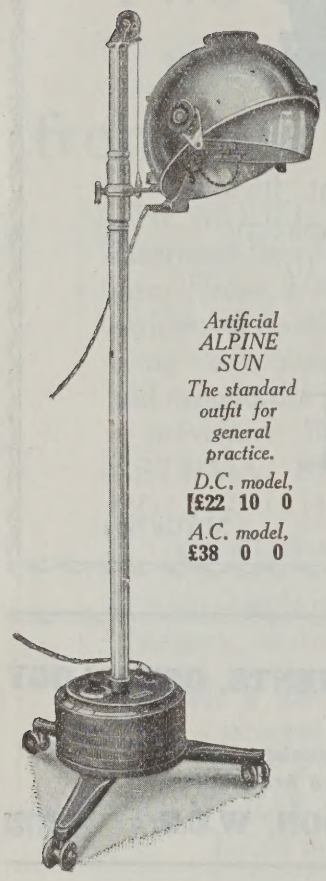

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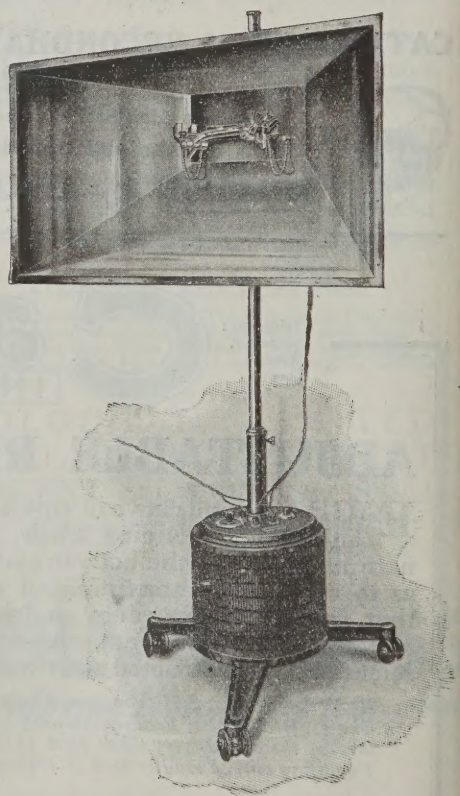

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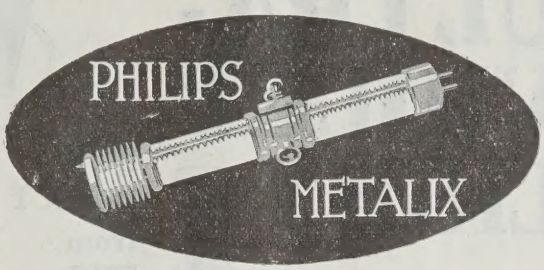

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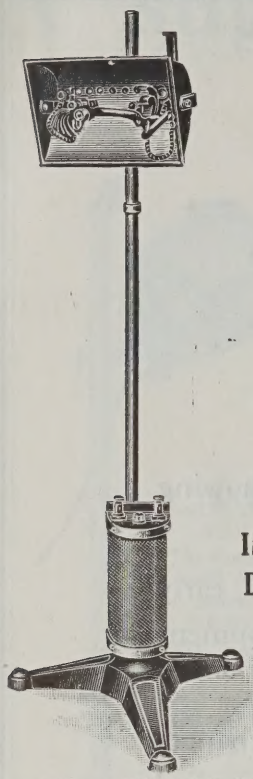

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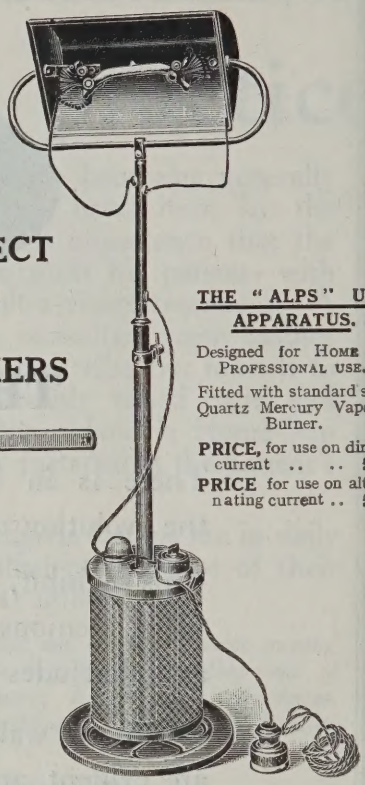

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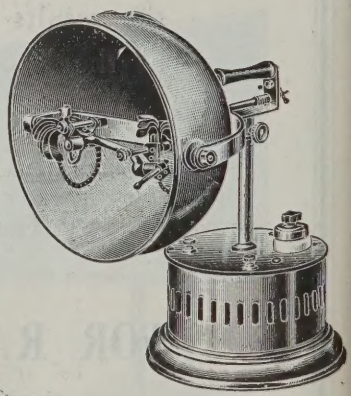

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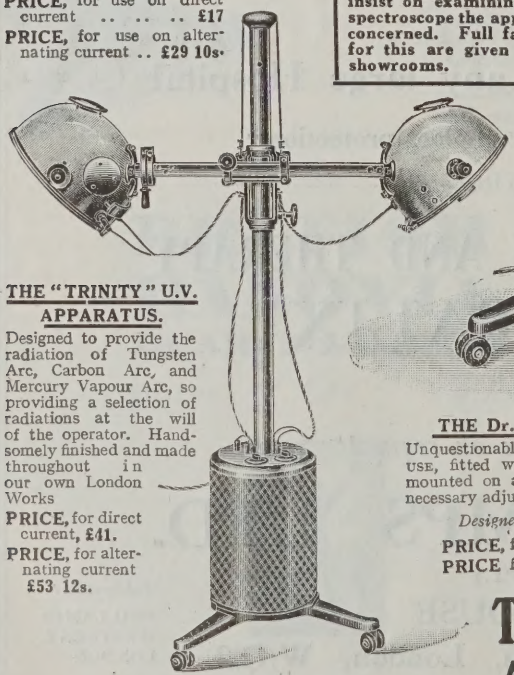

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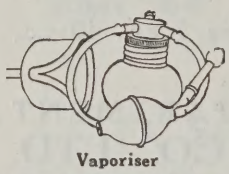

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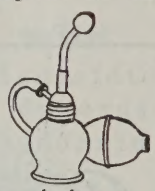
THE LANCET says:

"They render fluids like smoke."

Brochure describing these instruments and giving many valuable formulæ will be sent on application.



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In single ampoules and in boxes of ten ampoules.

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FERMENTATIVE DYSPEPSIA.

When the secretion is vitiated in quality, and the motricity of the stomach weakens, that organ dilates, and the gastric stagnation allows the micro-organisms of many ferments to develop. Quite a series of acids are then to be met with (butyric, lactic, acetic, etc.), which not only irritate the mucosa, but further, after their passage into the intestine, become absorbed by the lymphatics and swept into the circulation. **Vichy-Célestins,** by its slightly stimulating action, clears out the stomach, and this avoids stagnation and consequent fermentation. As, in addition to doing this, it modifies stomachal metabolism, the secretions return little by little to their normal physiological condition.

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"Alocol" leaves intact the acid reaction of the gastric juice and its normal digestive and bactericidal functions. It is the remedy *par excellence* for hyperchlorhydria. The absorbent, healing and sedative properties of "Alocol" also prove of the greatest value in successful treatment of the more serious manifestations, such as gastrectasis, gastrelcosis, pyloric and duodenal ulcers, infective enteritis, &c.

Complete chemical history of "Alocol" with convincing clinical reports, and supply for trial, sent free to physicians on request.

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Its use ensures :
1. Ready adjustability and accuracy of dose ;
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'A.B.' Brand Insulin maintains a world-standard of purity and excellence ; its activity is guaranteed by the most complete physiological tests and standardisation on the basis of the accepted unit. Before issue, each batch is passed under the authority of the Medical Research Council.

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20 units per c.c. Packed in bottles containing :
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10 c.c. (200 „ 20 „) **5/4** „
25 c.c. (500 „ 50 „) **13/4** „

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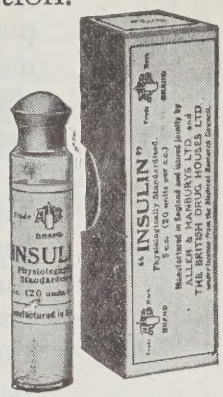

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Harmless — Reliable — Quick Acting

Anusol-Goedecke affords prompt relief from pain. Anusol-Goedecke disinfects and soothes inflamed congested areas and promotes healing. One Suppository to be used night and morning.

Genuine Anusol Suppositories are issued only in red boxes closed with a cord and metal seal.

Each box contains 10 Suppositories.

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Cod. Phosph: 0.01 gram. Phenacetin: Acid Acetyl. Salicyl: aa 0.25 gram.

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All kinds of Headache. Painful Menstruation. Dysmenorrhoea. Tabetic Crises.

Veganin is an excellent example of the enhanced action of certain medicaments when administered in combination in a suitable form. Is markedly effective in really serious cases.

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Original Tubes 10 or 20 Tablets 7½ grains.

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A Colloidal complex of Diacetyltannin—silver albumen, containing 6% metallic silver.

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Highly effective — Non-irritant

Advantages of Targesin : Fixation and storage in mucous membrane. Penetration into Littre's Glands. Rapid cessation of secretion. Being absolutely painless, and non-irritant, it prevents complications. Strongly Bactericidal. Pronounced antiphlogistic and "deep" action. Dissolves easily and completely in water.

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Perfect emulsification; stability; pleasant taste without artificial flavouring.

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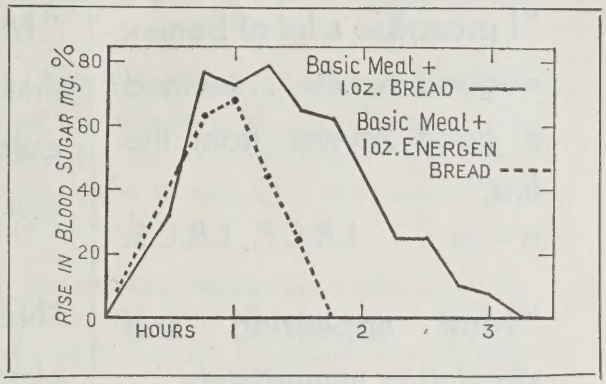
The Triumph of Energen Bread

Effect on the Blood-Sugar Rise in DIABETES.

CHART PREPARED BY HIGH AUTHORITY

(See LANCET, p. 1336, Vol. II., Dec. 24th, 1927.)

Shows rise in blood-sugar after the test-meal plus 1 oz. bread and after the same meal plus 1 oz. Energen bread.
The area between the curve and the base-line represents the total rise. The base-line represents the initial fasting blood-sugar.



According to LANCET *analysis Energen Bread contains* 15 % *less carbohydrate than the average analysis made by Joslin of ordinary wheat breads*

A FULL report of an investigation to determine the effect of Carbohydrate Foodstuffs on the blood-sugar in Diabetes was published in "The Lancet" of Dec. 24th, 1927.

This report shows that Energen Bread gave in three experiments on one subject, a rise in blood-sugar of about half that of the Hospital bread used, and is conclusive evidence that ordinary Bread, however high the quality, is unsuitable for the diabetic diet.

Energen Bread contains standardised and unvarying proportions of Protein, Carbohydrate and Fat. It is prescribed by leading physicians and is in use at the principal Hospitals. It is the only diabetic Bread which should be prescribed to ensure the best results.

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Physicians are invited to send for tables of gram and calorie values, and full analyses of all Energen Starch-Reduced Foods, together with samples of Energen Bread for complete test diets without charge.

PRICE FROM 1/3 PER BOX

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SPECIAL TERMS TO NECESSITOUS PATIENTS ON DOCTOR'S CERTIFICATE.

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The originals of these reports may be seen at our office by any registered medical practitioner.

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IT is not generally recognized that antiseptics exhibit wide variations in their power of killing different bacteria. Any given antiseptic may kill one organism under certain conditions in high dilution; for another organism under similar conditions it will be found comparatively innocuous.

Phenol, the first antiseptic ever used, affords an example of this. It differentiates so markedly between the typhoid-coli group and the Gram-positive cocci that, if added in the proportion of 1 in 200 to a medium inoculated with a mixture of B. coli and streptococci, the former are killed and the latter multiply.

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Monsol, which is derived from a by-product of the Mond power-gas process, differs radically from other coal-tar antiseptics in its selective action. Its power of killing the Streptococcus Pyogenes is *more than* 10 *times greater than that of pure phenol or of lysol.*

Monsol is non-poisonous and non-irritant, and can be applied in effective dilution even to mucous membranes. In view of these facts, it is not surprising that Monsol has been found to have unprecedented qualities in the treatment of streptococcal infections.

Monsol can be applied to the treatment of septic conditions of the SKIN, the MOUTH and THROAT, and the GENITO-URINARY TRACT.

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Liquid for dressings, douches, packs, and all sick-room purposes

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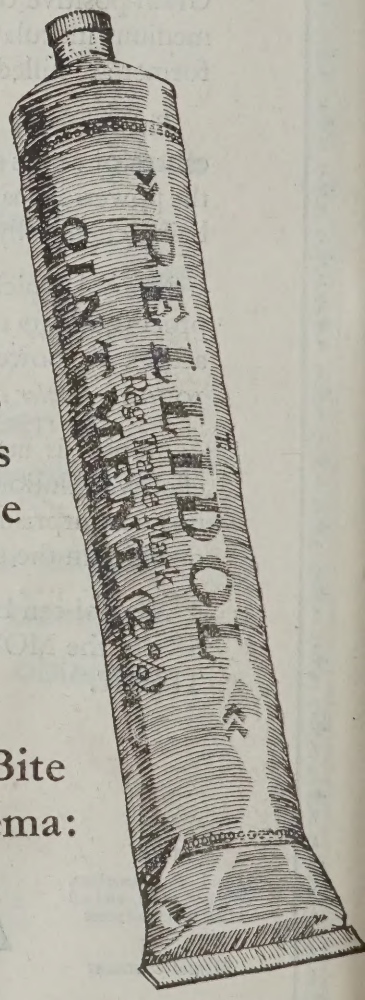
IN A PARAFFIN BASE.



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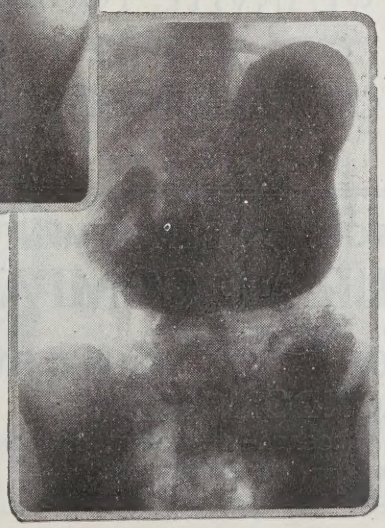
(Shadow Meal)

A Specially Prepared Barium Meal for X-Ray Diagnosis



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"Umbrose" (Shadow Meal) is prepared in three sizes as follows:

No. 1 contains 2 oz. $BaSO_4$
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This distinguishes 'ERNUTIN' from the many galenical preparations of Ergot which have been found to be seriously deficient in activity. 'ERNUTIN' is of unvarying strength and its use ensures definite physiological response.

For Oral Administration: 'ERNUTIN' (Oral), in bottles of 30 c.c., 4 fl. oz. and 16 fl. oz., at **2/6, 7/6** and **25/-** each respectively. A palatable fluid, which does not produce nausea.

For Hypodermic and Intramuscular Injection: 'HYPOLOID' 'ERNUTIN,' in boxes of six hermetically-sealed containers of 0·6 c.c. (approx. min. 10) of Sterile Solution, at **3/4** per box.

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ERGOTOXINE ETHANESULPHONATE

This salt, originated by Burroughs Wellcome & Co., presents Ergotoxine (the specific alkaloid of Ergot of Rye) in the purest state yet attained. It is white, crystalline, stable and more soluble than the phosphate.

Tubes of 0·1 *gramme, at* **8/6** *per tube*

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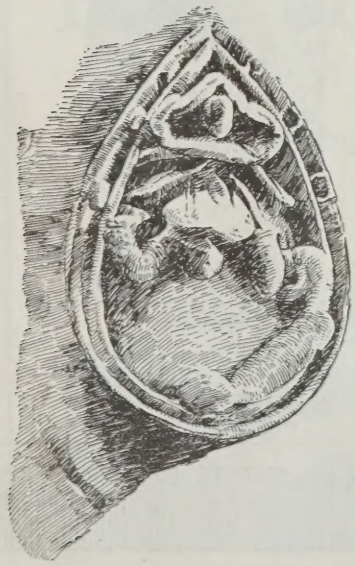

ANCIENT ROMAN VOTIVE OFFERINGS, CONSISTING OF MODELS REPRESENTING PARTS OF THE HUMAN BODY.—The custom of making offerings to the gods was inherited by the Romans, who called the objects presented *donaria*. Their motive was chiefly thanksgiving and prayer, but also sometimes propitiation. A very wealthy individual or a state might build a temple or a shrine and dedicate it to the service of the god, but the great majority of people would offer some small representation which served to indicate the subject of the prayer or thanksgiving. Thus there have come to light many figures of armed warriors, farmers milking cows, spoils of war, weapons, tools, sickles, wine-presses, surgical instruments, etc. In addition, great numbers of images of parts of the human body were deposited in the temples of the healing gods, as thank-offerings for deliverance from sickness or in anticipation of cure. The organ or limb affected was represented, either in order to demonstrate the nature of the malady cured, or, when offered in appeal, to ensure that the deity should be left in no doubt as to the particular service sought. Among the most common ex-votos of medical interest were models of eyes, ears, the human trunk, coils of intestines, genitalia, the uterus, ovaries, kidneys, livers and breasts. They were made of terra-cotta, marble or metal, and were generally very poorly constructed from the point of view of anatomy. Some, however, showed considerable skill—a fact which has given rise to the suggestion that these constitute a pioneer attempt at anatomical illustration. Perhaps most frequently the potters who moulded the organs merely made rough copies from glimpses gained of the viscera of sacrificial animals or from examinations in butchers' shops. The intestinal tract here reproduced would seem to indicate a knowledge of human anatomy.

DATE: A.D. c. 250

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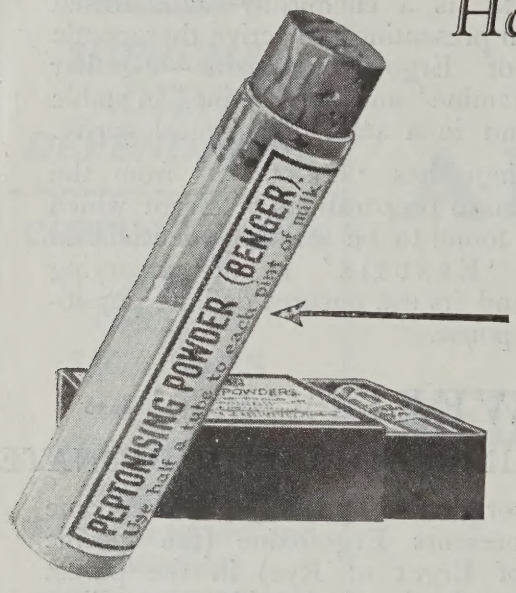
The most efficient Peptonising Powders!



Half a tube of Benger's is enough!

While half a tube of Benger's Peptonising Powders is enough to peptonise a pint of milk, gruel or soup, in most cases in 10 minutes, the extent of the peptonising action can be regulated by either increasing or diminishing the quantity of the powders, and by lengthening or shortening the time during which they are allowed to act on the milk, gruel, etc.

Generally speaking, Benger's Peptonising Powders produce the required result with half the quantity necessary of other preparations, whose initial cost also is higher.

Prices:
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Benger's Liquor Pancreaticus.

An important aid in the preparation of Peptonised Milk, etc.

Benger's Liquor Pancreaticus is an active solution of the digestive principles of the Pancreas; a really efficient agent for the digestion of milk, gruel, and farinaceous or partly farinaceous foods. Benger's Liquor Pancreaticus is odourless and tasteless.

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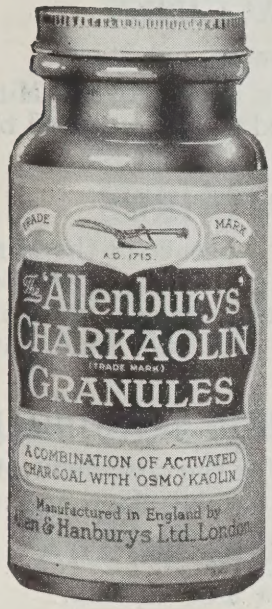
Medical men may obtain full particulars of Benger's preparations post free on request.

BENGER'S Food

REGD. TRADE MARK.

The 'Allenburys'



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'Charkaolin' is a new and highly efficient agent for the treatment of intestinal infections characterized by abnormal fermentation and the formation of toxins. It combines the absorbent properties of highly activated vegetable charcoal with the well-known toxin adsorbing qualities of 'Osmo' Kaolin. It is in the form of fine, clean granules which disintegrate rapidly in water and diffuse their ingredients evenly throughout the liquid. 'Charkaolin' is tasteless, forms a fine suspension in water and is, therefore, quite easy to take.

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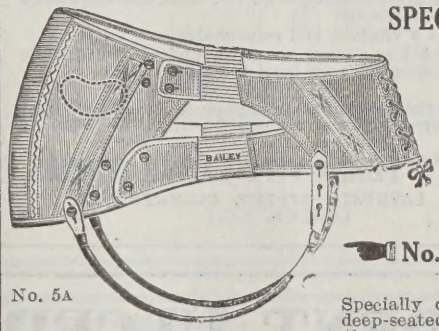

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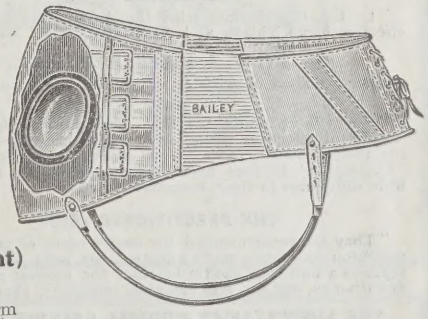

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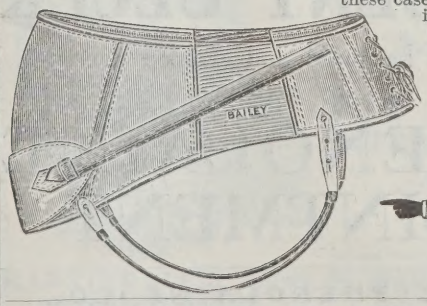

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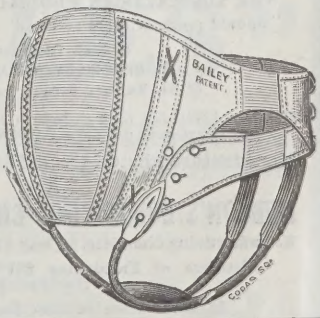

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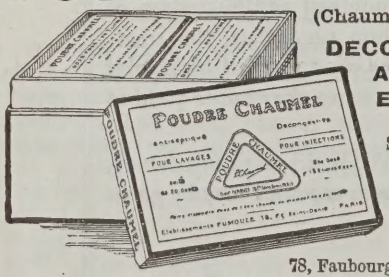

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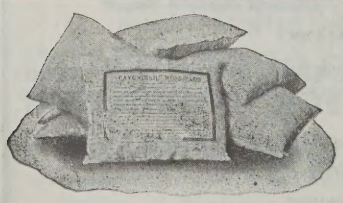

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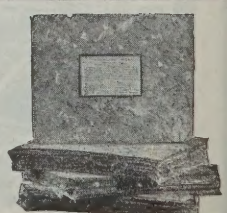

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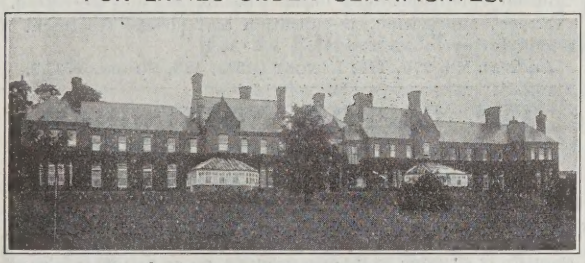

Terms from 2½ gns. per week. Apply Medical Superintendent

ST. LUKE'S HOSPITAL

(For Mental Disorders).

THE RT. HON. LORD BLANESBURGH, G.B.E., *Treasurer.*

WELDERS HOUSE,

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situated in extensive grounds, amid beautiful country, and within easy distance from London, receives a few LADIES requiring treatment for mild Nervous and Mental Disorders.

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A PRIVATE HOME for the treatment of gentlemen suffering from Mental and Nervous Illness, including the allied Disorders of Alcoholism and the Drug Habit. All types of early Mental and Nervous Cases are received without certificates as Voluntary Boarders. Bracing hill country. See "Medical Directory," p. 2092.—Apply to Medical Superintendent. 'Phone 10 P.O., Church-Stretton.

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Private suites. Voluntary Boarders received without certificates.

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Situated in 3½ acres of secluded gardens.

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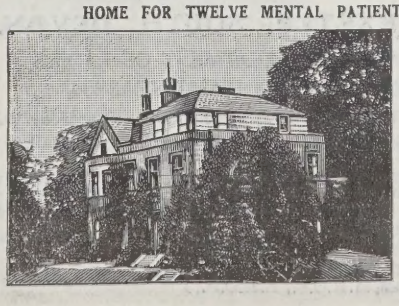

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Station: Clapham Common Tube.

Phone: Brixton 0494

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Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds with sea views.

Charges from 3 guineas weekly, including all necessaries except clothing.—Apply to the Medical Superintendent and Resident Physician, THOMAS BEATON, O.B.E., M.D., M.R.C.P.

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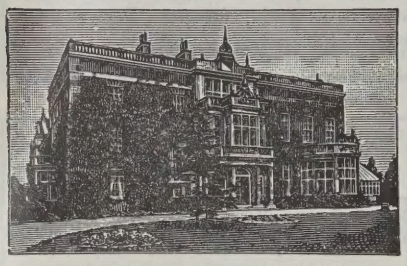

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For LADIES and GENTLEMEN of Unsound Mind.

Terms Moderate. Apply to Resident Medical Superintendent

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HOSPITAL FOR MENTAL DISORDERS.

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This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary Boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

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A REGISTERED HOSPITAL FOR THE CARE AND TREATMENT OF LADIES AND GENTLEMEN SUFFERING FROM NERVOUS AND MENTAL DISORDERS.

Within two miles of the G.W. Railway and L.M. & S. Railway Stations at Gloucester, the Hospital is easily accessible by rail from London and all parts of the United Kingdom. It is beautifully situated at the foot of the Cotswold Hills, and stands in its own grounds of over 280 acres. Voluntary Boarders of Both Sexes are also received for treatment.

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For particulars as to terms, &c., apply to ARTHUR TOWNSEND. M.D., Resident Superintendent.

Telephone: No. 7 Barnwood.

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CHEADLE, CHESHIRE.

This Registered Hospital for **MENTAL DISEASES** with its seaside branch Glan-y-don, Colwyn Bay, is for the treatment and care of PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES. Voluntary Boarders received.

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Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

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Ladies only received.

The Grove, Old Catton, Norwich.—

A High-class Home for the Curative Treatment of Nervous Affections. Voluntary Boarders are also received without certificates.

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London County Council.—

Accommodation for Male Paying Patients is provided at the LONDON COUNTY MENTAL HOSPITAL, Claybury, Woodford Bridge, Essex.

The hospital is thoroughly equipped for modern treatment of certified cases.

Terms exclusive of clothing and special luxuries, for patients having a legal settlement in the County of London, 44s. 11d. a week; for others, 48s. 5d. a week.

Full particulars from the Medical Superintendent, Claybury Mental Hospital, or from the Acting Chief Officer, Mental Hospitals Department, The County Hall, S.E.1.

NERVOUS or DELICATE BOYS and GIRLS

A few nervous, delicate or difficult young people are received in a London Specialist's country mansion situated midway between London and Brighton, secluded in charming grounds of 50 acres amidst beautiful surroundings. Farmery attached. Unusual opportunities for outdoor occupation and recreation.

Expert supervision, re-education and special treatment if required.

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HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. For terms, &c., apply to the Medical Superintendent.

SPRINGFIELD HOUSE

Phone: BEDFORD 3417.] **Near BEDFORD**

For Mental Cases with or without Certificates

Ordinary Terms Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

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An old-established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception terms, &c., may be obtained from the Resident Medical Officer.

ST. ANDREW'S HOSPITAL
FOR MENTAL DISORDERS,
NORTHAMPTON

FOR THE UPPER AND MIDDLE CLASSES ONLY.

PRESIDENT: THE MOST HON. THE MARQUESS OF EXETER, C.M.G., C.B.E.
MEDICAL SUPERINTENDENT: DANIEL F. RAMBAUT, M.A., M.D.

This Registered Hospital is situated in 120 acres of park and pleasure grounds. Voluntary Boarders, persons suffering from incipient nervous and mental disorders, as well as certified patients of both sexes, are received for treatment. Careful clinical, bio-chemical, bacteriological and pathological examinations. Private rooms with special nurses, male or female, in the Hospital or in one of the numerous villas in the grounds of the various branches can be provided.

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There is a Reception Hospital, in detached grounds with a separate entrance, to which patients and voluntary boarders can be admitted. It is equipped with all the apparatus for the most modern treatment of Mental and Nervous Disorders. It contains special departments for hydrotherapy by various methods, including Turkish and Russian baths, the prolonged immersion bath, Vichy Douche, Scotch Douche, Electrical baths, Plombières treatment, &c. There is an Operating Theatre, a Dental Surgery, an X-ray Room, an Ultra-violet Apparatus, and a Department for Diathermy and High Frequency treatment. It also contains Laboratories for bio-chemical, bacteriological, and pathological research.

MOULTON PARK

Two miles from the Main Hospital there are several branch establishments and villas situated in a park and farm of 650 acres. Milk, meat, fruit and vegetables are supplied to the Hospital from the farm, gardens and orchards of Moulton Park. Occupation therapy is a feature of this branch, and patients are given every facility for occupying themselves in farming, gardening, and fruit growing.

BRYN-Y-NEUADD HALL

The Seaside house of St. Andrew's Hospital is beautifully situated in a Park of 330 acres, at Llanfairfechan, amidst the finest scenery in North Wales. On the North West side of the Estate a mile of sea coast forms the boundary. Voluntary Boarders or Patients may visit this branch for a short seaside change or for longer periods. The Hospital has its own private bathing house on the seashore. There is trout-fishing in the park.

At all the branches of the Hospital there are cricket grounds, football and hockey grounds, lawn tennis courts (grass and hard court), croquet grounds, golf courses and bowling greens. Ladies and gentlemen have their own gardens, and facilities are provided for handicrafts such as carpentry, &c.

For terms and further particulars apply to the Medical Superintendent (TELEPHONE: No. 56 Northampton) who can be seen in London by appointment.

BETHLEM ROYAL HOSPITAL, LAMBETH ROAD, S.E.1

(For the Reception and Treatment of cases of Nervous and Mental Disease). *Telephone: Reliance 2182.*

President: COL. and ALDERMAN SIR CHARLES CHEERS WAKEFIELD, Bart., C.B.E.
Treasurer: SIR LIONEL L. FAUDEL-PHILLIPS, Bart.
Physician Superintendent: J. G. PORTER PHILLIPS, M.D., F.R.C.P. Assisted by Physicians, a Pathologist, and a Staff of Visiting Consultants.

Patients of the **educated classes, in a presumably curable condition,** are eligible for admission. With a view to the early treatment of eligible cases **Voluntary or Uncertified** Patients are admitted. **Patients who can contribute 3 guineas weekly towards the cost of maintenance may be received as vacancies arise.** Treatment is carried out on the most modern principles. In connection with this Hospital there is a Convalescent Home on the Surrey hills at Witley.

For further particulars apply to the Physician Superintendent.

PECKHAM HOUSE, 112, Peckham Road, London, S.E. 15

Telegrams: "Alleviated, London." **Telephone: Rodney 4741 & 4742.**

The above House, which was established in 1826, is an Institution for the care and treatment of persons suffering from mental diseases and nervous disorders. Both certified patients and Voluntary Boarders are received. Separate houses for the treatment of special and suitable cases adjoin the Institution. There is a seaside branch to which holiday parties are sent during the Summer months. Motor and carriage exercise is provided as required. Patients can avail themselves of a course of physical drill. Tennis courts, Entertainments, dances, and indoor amusements held throughout the year.

Illustrated prospectus and further particulars can be obtained from the MEDICAL SUPERINTENDENT.

THE OLD MANOR SALISBURY

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS.

Extensive grounds. Detached Villas. Chapel. Garden and dairy produce from own farm. Terms very moderate

CONVALESCENT HOME AT BOURNEMOUTH standing in 9 acres of ornamental grounds, with tennis courts, etc., which Patients or Boarders may visit, by arrangement, for long or short periods.

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NEWTON-LE-WILLOWS, LANCASHIRE.

For the reception and treatment of PRIVATE PATIENTS of both sexes of the UPPER AND MIDDLE CLASSES either voluntarily or under Certificate. Patients are classified in separate buildings according to their mental condition.

Situated in park and grounds of 400 acres. Self-supported by its own farm and gardens in which patients are encouraged to occupy themselves. Every facility for indoor and outdoor recreation. For terms, prospectus, etc., apply MEDICAL SUPERINTENDENT.

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An Illustrated Prospectus, giving full particulars and terms, may be obtained upon application to the Secretary.

HOVE VILLA, BRIGHTON.—A Convalescent Branch of the above.

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RECENTLY OPENED FOR THE TREATMENT OF PULMONARY TUBERCULOSIS.

WELL SITUATED ON HIGH GROUND AND SURROUNDED BY PINES AND HEATHER.

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This Sanatorium is established for the treatment of Tuberculosis of the Lungs and the Pleural Cavities. It is situated in the midst of a large area of park-land at a height of 450 feet above sea-level, on the south-west slopes of mountains rising to over 1800 feet, which protect it from north and east winds and provide many miles of graduated walks with magnificent views. Average rainfall 29·57 per annum. Full day and night Nursing Staffs. X Ray Plant. Every facility for Artificial Pneumothorax and for operations on the chest. Electric Lighting. Central Heating. Home Farm. Grade A Milk from T.T. Herd.

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Apply: Secretary, Cotswold Sanatorium, Cranham, Gloucester.
Telephone: 41 Witcombe. *Telegrams:* Hoffman, Birdlip

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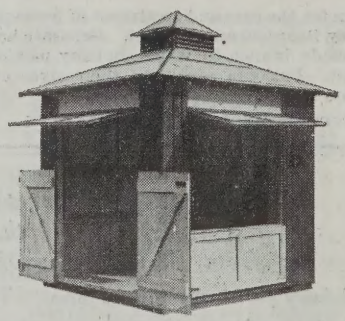

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Telegrams: CASTLE, RUTHIN. *Telephone:* 66 RUTHIN.

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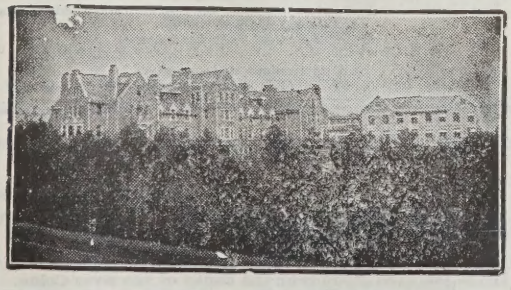
MURTLE, DEESIDE, ABERDEENSHIRE.



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One hour by road or rail from London.

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Apply to the Medical Superintendent.

Physician of wide experience in the Treatment of Mental Disorder has a VACANCY in his Private Home for a Patient—voluntary or certified. Extensive lawns. Beautiful gardens. Occupations. In-door and out-door games. Motoring. Easy distance from town. Terms moderate.—Address, No. 862, THE LANCET Office, 423, Strand, W.C.2

Mental Case.—Can anyone recommend a GOOD HOME for young girl, not very far from London. Inclusive fees, must be moderate.—Fullest particulars to Box 760. T. B. Browne's Advertising Offices, 163, Queen Victoria-street, London, E.C.4.

The Victoria Hospital for Children,

Tite-street, Chelsea, S.W.3. (130 Beds.)

The Committee of Management invite applications for the posts of HOUSE PHYSICIAN and HOUSE SURGEON (both vacant 1st August, 1928). The appointments are for six months. Salaries at the rate of £100 per annum, with board, lodging, and washing.

Candidates must attend the Hospital for the purpose of an interview at 3.30 P.M. on Friday, 20th July, 1928. (No travelling or other expenses will be paid.) They must hold Medical and Surgical qualifications and be registered under the Medical Act.

Applications, with copies of three recent testimonials, should be sent to the Secretary not later than first post on Wednesday, 18th July, 1928.

By order.
D. ST. JOHN BAMFORD, Secretary.

"MOORFIELDS" RESEARCH SCHOLARSHIP

Applications are invited for this

SCHOLARSHIP

of the value of £50 per annum.

The successful Candidate will conduct Clinical Research at the Hospital. **Names must be sent in by 15th July, 1928.**

For details apply to :—

The Dean, Royal London Ophthalmic Hospital, City Road, London, E.C. 1

Royal Borough of Kensington.

TEMPORARY TUBERCULOSIS OFFICER.

The Council of the Royal Borough of Kensington are prepared to accept applications for the appointment of a Male Medical Officer, with experience of tuberculosis work, to act as Holiday Locum at the KENSINGTON TUBERCULOSIS DISPENSARY, 119, Ladbroke-grove, W.11, for one month as from 1st September. *Sessions :* Six morning, four afternoon and one evening per week. Honorarium 35 guineas.

Applications must be delivered to the Medical Officer of Health, Town Hall, Kensington, W.8, not later than 18th July, 1928.

Hospital for Consumption & Diseases

OF THE CHEST, Brompton, S.W.3.—The Committee of Management invite applications for the post of HOUSE PHYSICIAN (for which there are two vacancies). The duties include work in the Out-patient Department as well as in the Wards. Applications, with copies of testimonials, must be sent in not later than Saturday, 14th July, 1928, addressed to the Secretary. The appointment is for six months, commencing on 1st August, 1928, with an honorarium of £50.

Brompton, June, 1928. FREDERICK WOOD, Secretary.

National Hospital, Queen Square.

HONORARY SURGICAL ASSISTANT.

The Board of Management invite applications for the post of Honorary Surgical Assistant.

The appointment will be made for a period of one year but the holder will be eligible for re-election for a second year. Particulars of the duties may be obtained from the undersigned. Applications should reach the Hospital not later than Saturday, July 7th. Applicants must be Fellows of the R.C.S. of England.

GODFREY H. HAMILTON, Secretary.
National Hospital, Queen-square, W.C.1.

London School of Hygiene & Tropical MEDICINE.

DIVISION OF MEDICAL ZOOLOGY.

RESEARCH STUDENTSHIP IN HELMINTHOLOGY.

Applications are invited for a whole-time Research Studentship in the Department of *HELMINTHOLOGY* of the value of £250 per annum, tenable from 1st October, 1928.

The Studentship will be held normally for a period of two years, and is subject to a probationary period of one term of twenty weeks, for which proportionate remuneration at the rate of £250 a year will be paid.

The holder of the Studentship is required to give assistance to the Head of the Department during the actual progress of the course of study in each term, but for a substantial part of each term will be engaged upon research.

Applications should be addressed to the Secretary of the School at 25, Gordon-street, London, W.C.1. (from whom further particulars can be obtained), and should be received not later than 14th July, 1928.

Woolwich Union.

SECOND ASSISTANT MEDICAL OFFICER.

A Second Assistant Medical Officer (Male) is required at the PLUMSTEAD AND DISTRICT HOSPITAL, Plumstead High-street, S.E.18.

Candidates must be single men and be doubly qualified and registered.

The person appointed must have held a position as House Surgeon and House Physician, and have had practical experience in Gynecology and Obstetrics. He will be required to carry out such duties as may be assigned to him by the Medical Superintendent, and should occasion arise, to assist at any of the other establishments under the control of the Guardians.

Salary £350, rising £25 annually to £400, with residence and rations, subject to deductions under the Poor-law Officers' Superannuation Act.

Further particulars of the appointment may be obtained by personal application to the Medical Superintendent between the hours of 10 A.M. and 12 noon, or by letter.

Applications, upon forms to be obtained from my office as under, upon receipt of a stamped, addressed foolscap envelope, or by personal application, must be returned to me not later than the 6th July, 1928.

By order.
ARTHUR HOLDER, Clerk to the Guardians.
Union Offices, Plumstead High-street, S.E.18,
18th June, 1928

Royal Free Hospital, Gray's Inn-road, W.C.1.

Applications are invited for JUNIOR CLINICAL ASSISTANTS in all medical, surgical, and special departments for six months from the 1st August, 1928.

Intending candidates should submit applications, stating age and qualifications, to the undersigned on or before 7th July 1928. Preference will be given to former students of the Hospital.

REGINALD R. GARRATT, Secretary.

London Jewish Hospital, Stepney Green, E.1.

The Council of Management invite applications for the post of HONORARY RADIOLOGIST, who will be required to attend the Hospital on three half-days each week.

Candidates desiring to make application must send twenty copies of their application, with copies of three recent testimonials, to the Secretary at the Hospital on or before Friday, the 20th July, 1928.

Saint Mark's Hospital for Cancer, FISTULA & OTHER DISEASES OF THE RECTUM, City road, London, E.C.1.

RESIDENT SURGICAL OFFICER (Male) required. Must be fully qualified. Salary £150 per annum and certain emoluments, with board, residence, and laundry.

The appointment is for a minimum of six months from 1st September next.

Applications, with copies of testimonials, must reach the Secretary (from whom further particulars may be obtained) not later than 9th July, 1928.

St. Mary's Hospital, W. 2.

DENTAL SURGEON.

Applications are invited for the vacancy which has occurred in the office of Dental Surgeon.

Candidates are requested to forward their applications, with copies of testimonials not exceeding six in number, addressed to the Secretary at the Hospital on or before Saturday, 14th July, 1928.

The Dental Surgeon must hold registered qualifications in Medicine and Surgery.

The appointment will be for five years, at the expiration of which term the holder will be eligible for re-election.

By order.

W. PARKES, Secretary.

Commissions in the Royal Army MEDICAL CORPS.

A limited number of Commissions in the Royal Army Medical Corps, not exceeding 25, will be offered in July, 1928.

Applications for consideration should reach the War Office not later than 20th July, 1928.

Candidates must be under twenty-eight years of age on 31st July, 1928, and will be required to present themselves in London for interview and medical examination towards the end of July.

There will be no Entrance Examination.

Full particulars as to conditions of Service and emoluments may be obtained on written or personal application to the Under Secretary of State, War Office, (A.M.D.1.), Whitehall, London, S.W.1.

£350 SURGICAL SCHOLARSHIP.

The Association of Surgeons of Great BRITAIN AND IRELAND invite applications for a Surgical Scholarship of the value of £350 to be held for one year. The object of the Scholarship is to enable the holder to pursue a definite line of research or to study surgery in specified clinics, either at home or abroad.

Candidates in their applications are required to state the line of research or study that they intend to pursue and also to give a résumé of their past careers. No testimonials should be sent but each candidate is required to provide letters of recommendation, to be forwarded under separate cover, from two Sponsors.

The election will be made in November, 1928, and applications must be forwarded to the Secretary of the Association by September 30th, 1928.

E. C. HUGHES, Hon. Secretary.
The Association of Surgeons,
17, Wimpole-street, London, W.1.

West London Hospital, Hammersmith-road, W.6. (226 Beds).

Applications are invited for the post of RESIDENT ASSISTANT SURGEON from 1st August. Salary at the rate of £200 per annum with board, lodgings, and washing allowance. The appointment will be for one year terminable by one month's notice on either side, and subject to annual re-election, may be extended to not more than three years. Candidates must be duly qualified Medical Practitioners and it is desirable that they should hold the F.R.C.S. (England) Diploma.

Applications, accompanied by copies of testimonials, must reach me not later than 1st post on Thursday, 19th July. Candidates must attend a Special Meeting of the Medical Council on Friday, 20th July, at 4.30 P.M. and prior to that date call upon and send copies of application and testimonials to each member thereof. They must not canvass Members of the Board, but, if notified, must attend a Meeting of the Board at 5 P.M. on Tuesday, 24th July, when the election will be made.

H. A. MADGE, Secretary.

Central London Ophthalmic Hospital, Judd-street, W.C.1.

There is a vacancy for the post of PATHOLOGIST. Candidates, who must be duly registered Medical Practitioners, must be willing to attend the Hospital three days in the week. Honorarium £75 per annum. The appointment will be for one year (subject to re-election). Applications, with testimonials, must be sent to the undersigned not later than July 14th.

H. R. S. DRUCE, Secretary.

Central London Ophthalmic Hospital, Judd-street, St. Pancras, W.C.1.

JUNIOR HOUSE SURGEON required to commence duty on August 1st. Salary at the rate of £50 per annum, with board and residence in the Hospital. Applications, with testimonials, from duly qualified candidates, must be sent to the undersigned not later than July 14th.

H. R. S. DRUCE, Secretary.

Appointment of Clinical Tuberculosis. OFFICER.

Applications are invited for the above appointment in connection with the HACKNEY AND STOKE NEWINGTON TUBERCULOSIS DISPENSARY, at the METROPOLITAN HOSPITAL, Kingsland-road, E.8.

Candidates must—

(*a*) Be registered Medical Practitioners, and not over forty-five years of age.
(*b*) Have held a House or other appointment in a General Hospital for not less than six months.
(*c*) Have had practical experience in the diagnosis and treatment of Tuberculosis in Sanatoria or elsewhere.

The possession of a Diploma in Public Health and practical experience in bacteriological work will be deemed additional qualifications for the post.

The successful candidate will be required to devote the whole of his time to the duties of the post.

Salary will be at the rate of £750 per annum, rising to £850 per annum by two annual increments of £50.

The appointment will be determined by three months' notice on either side.

Applications, stating age, qualifications, and previous experience, accompanied by copies of not more than three recent testimonials, to be forwarded to the undersigned at the Metropolitan Hospital, E.8., not later than first post on Monday the 9th July, 1928, endorsed "Appointment of Tuberculosis Officer."

Canvassing is strictly prohibited, and will be deemed a disqualification. (Signed) HERBERT F. RUTHERFORD.
Secretary to the Joint Dispensary Committee.

Hackney Hospital.

INCREASE OF MEDICAL STAFF.

The Board of Guardians invite applications from duly qualified gentlemen for the positions of JUNIOR ASSISTANT MEDICAL OFFICERS (two).

Candidates must be single. For one position the candidate must have held a Resident Medical appointment in a Hospital, and for the other position the candidate must have held a Resident Surgical appointment in a Hospital.

The Hospital, which is situated at High-street, Homerton, E, contains 800 beds, and is equipped with modern requirements.

The Staff consists of a Medical Superintendent, a Deputy Resident Medical Superintendent, two Senior Resident Medical Officers, three Junior Resident Medical Officers, a Clinical Pathologist, and a consulting Radiologist.

The remuneration is at the rate of £350 per annum, rising at the end of one year to £375 per annum, together with rations, washing, furnished apartments, and attendance.

The officers appointed will be required to render assistance at the other establishments and departments of the Union, to assist in the training and instruction of Nurses and to devote their whole time to the service of the Guardians.

The appointment will be subject to the provisions of the Poor Law Officers' Superannuation Act, 1896.

Further particulars as to the duties may be obtained from the Medical Superintendent.

Canvassing the Guardians, directly or indirectly, will disqualify candidates.

Applications must be made on forms which are obtainable from the undersigned. The forms must be completed and returned, with copies of not more than three recent testimonials, by Friday, the 6th July, 1928.

By order.
E. W. HARBOUR, Clerk to the Guardians.

Clerk's Offices, Hackney Union,
2, Sidney-road, Homerton, E.9.

County Borough of Blackburn.

ASSISTANT DENTIST.

Applications are invited from Dental Practitioners holding a registered Diploma or Degree in Dental Surgery who are willing to undertake the Dental Treatment of School Children, Expectant and Nursing Mothers, and of Tuberculous Patients. Salary will be at the rate of £475 per annum, rising at the end of twelve months' satisfactory service to a maximum of £500 per annum. Forms of application, which must be returned by the 12th July, 1928, may be obtained from the Medical Officer of Health, Health Offices, Victoria-street, Blackburn.

J. F. CARR, Director of Education.

The University of Manchester.

Applications are invited for the post of READER in Materia Medica and Therapeutics. Stipend £800 per annum. Duties to commence September 29th, 1928. Last date for applications, July 7th. Further particulars may be obtained from the Registrar.

City and County of Kingston-upon-HULL and HULL AND GOOLE PORT SANITARY AUTHORITY.

Applications are invited from Medical Men, under forty years of age, for an appointment as ASSISTANT MEDICAL OFFICER OF HEALTH.

Salary £600 per annum, increasing by annual increments of £25 to a maximum of £700 per annum.

Applicants must be duly registered Medical Practitioners of at least three years' standing and holding a Diploma in Public Health.

The successful candidate will be required to devote the whole of his time to the duties of his office; he will be engaged mainly in School Medical Work, but he will also be required to undertake duty in any section of the Health Services of the City or Port. Candidates must have had special experience in Pædiatrics and be able to undertake Refraction work. Preference will be given to candidates who have a certificate for the treatment of Venereal Diseases and who have had experience in Tuberculosis work.

The appointment is subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1922.

Further particulars of the duties and conditions of service and orms of application can be obtained on application to the undersigned.

Completed applications, together with copies of three recent testimonials, must reach me not later than the first post on Thursday, 5th July, 1928.

W. ALLEN DALEY, Medical Officer of Health.

Guildhall, Hull.

Surrey County Council.

ASSISTANT MEDICAL OFFICER.

Applications are invited for the appointment of a Male Assistant Medical Officer. Candidates must possess a qualification in Public Health, and have had experience in the medical inspection of school children, maternity and child welfare, and the treatment of tuberculosis and venereal diseases. The officer appointed will be required to undertake such other public health duties as may be allocated to him. He will be on the staff of the County Medical Officer of Health, must reside in the County, and devote his whole time to the work. Salary £600 per annum, rising by annual increments of £20 to £700 per annum. Travelling expenses in accordance with the Council's scale will be allowed.

The appointment will be subject to the approval of the Ministry of Health, to the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and to the Standing Orders of the Council, which provide, inter alia, that appointments may be determined at any time by three months' notice.

Applications, stating age, qualifications, and experience, together with copies of three recent testimonials, should be made on the prescribed form and sent to the County Medical Officer of Health, 5, Grove-crescent, Kingston-upon-Thames, from whom copies of the application form may be obtained, and to whom any enquiries relating to the appointment should be addressed.

Last day for receipt of applications, Friday, 6th July, 1928. Canvassing, directly or indirectly, will disqualify.

DUDLEY AUKLAND, Clerk of the County Council.

County Hall, Kingston-upon-Thames, 13th June, 1928.

Surrey County Council.

DEPUTY COUNTY MEDICAL OFFICER OF HEALTH.

Applications are invited for the appointment of Deputy County Medical Officer of Health at a salary of £1000 per annum, together with subsistence and travelling expenses in accordance with the Council's scale.

Candidates must be registered Medical Practitioners with a public health qualification, and preferably be about thirty-five years of age.

Practical experience in the work of a public health department is essential. The successful candidate will be required to assist in the duties pertaining to the office of County Medical Officer, under whose control he will act, and to devote the whole of his time to the work.

The appointment will be subject to the approval of the Ministry of Health, to the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and to the Standing Orders of the Council, which provide, inter alia, that appointments may be determined at any time by three months' written notice.

Applications, stating age, qualifications, and experience, together with copies of three recent testimonials, should be made on the prescribed form and sent to the County Medical Officer of Health, 5, Grove-crescent, Kingston-upon-Thames, from whom copies of the application form may be obtained, and to whom any enquiries relating to the appointment should be addressed.

Last day for receipt of applications, Friday, 6th July, 1928. Canvassing, directly or indirectly, will disqualify.

DUDLEY AUKLAND, Clerk of the County Council.

County Hall, Kingston-upon Thames, 13th June, 1928.

Burton-on-Trent General Infirmary.

HOUSE SURGEON.

The Committee require the services of a duly qualified SENIOR RESIDENT HOUSE SURGEON (Male), with previous experience. Salary £200 per annum, with board and furnished quarters. Duties to commence August 1st, 1928. Applications, with full particulars, to be addressed to the undersigned.

E. W. THORNLEY, Secretary.

General Infirmary, Burton-on-Trent.

Taunton & Somerset Hospital (104 beds).

—JUNIOR HOUSE MEDICAL OFFICER (Male) required middle of August. Candidates must be registered. Appointment, which will be for six calendar months, is approved by the University of London for the purposes of the M.D. Examination.

Charge of Medical and Eye beds. Salary at the rate of £100 per annum, with board, residence, and laundry.

Applications, with testimonials, must reach the undersigned not later than July 14th.

Taunton. F. J. J. STACEY, Secretary.

District Infirmary, Ashton-under-Lyne (General Hospital, 200 Beds, mainly Surgical).

—A THIRD HOUSE SURGEON required. Six months' appointment. Salary at the rate of £150 per annum, with board, residence, and laundry. Preference given to candidates with anæsthetic experience.

The Resident Staff comprises a Resident Surgical Officer and three House Surgeons.

Applications, with testimonials, to be sent at once to the undersigned. FRANK OLIVER,

General Superintendent and Secretary.

June 20th, 1928.

Royal Sussex County Hospital, Brighton. (225 Beds.)

HOUSE SURGEON (Male) required about the 15th August, 1928, with charge of beds, part casualties and anæsthetics.

Salary £150 per annum, with board, residence, and laundry.

Candidates must hold Medical and Surgical qualifications of the British Empire, and be duly registered under the Medical Acts. They must be unmarried, and when elected under thirty years of age. Applications, with copies of testimonials, must reach the undersigned not later than 16th July, 1928.

L. L. W. LANCASTER-GAYE, Secretary-Superintendent.

Lancashire County Council.

BIDDULPH GRANGE ORTHOPÆDIC HOSPITAL.

Applications are invited for the post of JUNIOR HOUSE SURGEON (Woman) at the above Hospital, which contains 85 beds.

Salary is at the rate of £150 a year, together with board, residence, and laundry. The post is tenable for one year.

Candidates must be duly qualified and registered. Preference will be given to candidates who have held resident Hospital appointments and who are competent anæsthetists.

Applications, with copies of two recent testimonials, should be sent not later than 7th July, 1928, to Dr. J. J. Butterworth, School Medical and Child Welfare Department, County Offices, Preston. GEORGE ETHERTON, Clerk of the County Council.

School Medical and Child Welfare Dept., County Offices, Preston. June, 1928.

Applications are invited from qualified Lady Doctors for the post of MEDICAL OFFICER-IN-CHARGE, CAMA AND ALBLESS HOSPITAL FOR WOMEN AND CHILDREN, Bombay.

The post is pensionable and carries a scale of pay of Rs800–50–1000 for a Medical Officer of Asiatic Domicile, and Rs600–50–800 *plus* £20 per mensem as overseas pay for a Medical Officer of non-Asiatic Domicile, *plus* Rs200 house rent allowance in both the cases. Private Practice is allowed so long as it does not interfere with hospital duties. The selected candidate will be subject to leave rules under Fundamental Rules. Applicants should possess one of the higher British qualifications and must be competent Surgeons. Only those who possess these qualifications need apply to the undersigned before 31st July, 1928, furnishing the following particulars:—

(*a*) Full name.
(*b*) Date of birth.
(*c*) Nationality and whether of Asiatic or non-Asiatic Domicile.
(*d*) Professional qualifications with dates of obtaining the same.
(*e*) Posts held after qualification and previous experience, with testimonials, if any.

The selected candidate will be appointed on probation for two years, and will be confirmed if found satisfactory.

Signed, JELAL M. SHAH, Major, I.M.S.,
Personal Assistant to the Surgeon-General with the Government of Bombay, Poona (India).

INDIAN MEDICAL SERVICE

RECRUITMENT OF EUROPEAN OFFICERS

Applications are invited from Medical Men for permanent commissions in H.M.'s Indian Medical Service. The terms offered include a gratuity of £1,000 on retirement after six years' service or £2,500 after 12 years' service, together with free return passages for those who no longer desire to remain in the Service. In other respects the terms will be as detailed below.

Candidates must be British subjects under 32 years of age at the time of application and must be registered under the Medical Acts in force in Great Britain and Northern Ireland.

CAREERS.

The Indian Medical Service offers wide opportunities of medical experience, including clinical, preventive, specialist, and research work. At the beginning of his career an officer is employed on the military side which has medical charge of the Indian Army. Promotion is on a time scale up to the rank of Lieutenant-Colonel, and by selection to the ranks of Colonel and Major-General. An officer may apply after two years' Indian Service for transfer to the civil side, from which appointments are made to Civil Surgeoncies, which are established at the principal civil centres to provide for the medical needs of Civil Officials and for general medical administrative purposes; to specialist (e.g., Public Health and Bacteriological) services; to research posts; and to professorships at the Medical Schools.

PAY.

The monthly rates of pay for European officers in the Service who have a "non-Asiatic" domicile are as follows:—

Rank.	Service in Rank.	Basic Pay.	Overseas Pay.	Year of Total Service.
1	2	3	4	5
		Rs.	Rs.	
Lieut...	—	500	150	1st
			150	2nd
			150	3rd
Capt...	(i) During first 3 years' service as Captain ..	650	150	4th
			150	5th
			150	6th
	(ii) With more than 3 and less than 6 years' service as Captain	750	250	7th
			250	8th
			250	9th
	(iii) With more than 6 years' service as Captain	850	250	10th
			250	11th
			300	12th
Major..	(i) During first 3 years' service as Major ..	950		
	(ii) With more than 3 and less than 6 years' service as Major	1100		
	(iii) With more than 6 years' service as Major..	1250	300	13th and over.
Lt.-Col.	(i) Until completion of 23 years' total service ..	1500		
	(ii) During 24th and 25th years' service	1600		
	(iii) After completion of 25 years' total service ..	1700		
	(iv) When selected for increased pay	1850		

Extras.—In addition to the above rates various allowances are admissible for a large number of special appointments on both the military and the civil side which may be held by members of the Indian Medical Service. Special high rates of pay are also attached to the numerous administrative appointments open to officers in both branches of the Service.

WAR SERVICE CONCESSIONS.

Any service rendered by an officer during the War as a medical or combatant officer or in a position usually filled by an officer may be counted as service for increments of pay, promotion, retirement and retired pay, but not for gratuity.

One half of any service in the ranks during the War may be counted as service for retirement and retired pay only.

OUTFIT ALLOWANCE.

Officers on appointment will receive an outfit allowance of £50.

PRIVATE PRACTICE.

With the exception of Administrative Officers, military or civil, and officers holding certain special appointments, officers are not debarred from taking private practice, so long as it does not interfere with their proper duties.

PENSIONS.

The rates of pension are as follows:—

	Per annum.
After 17 years' service for pension	£400
„ 18 „ „	430
„ 19 „ „	460
„ 20 „ „	500
„ 21 „ „	540
„ 22 „ „	580
„ 23 „ „	620
„ 24 „ „	660
„ 25 „ „	700
„ 26 „ „	750
„ 27 „ „	800

These rates are subject to alteration on account of a rise or fall in the cost of living as compared with the year 1919, to an extent not exceeding 20 per cent. in all, the revision being undertaken triennially with effect from July 1st, 1927. A reduction of 4½ per cent. has been made on this account from the amounts shown.

There are additional pensions ranging from £65 to £350 per annum for officers who have held administrative appointments.

PASSAGES.

An officer on appointment is provided with a free passage to India. The wives and families of officers who are married prior to the date of the officers' embarkation on first appointment will also be provided with free passage to India.

Officers and their families are also eligible for passage concessions under which they are granted a certain number of return passages home at Government expense during their service.

INSTRUCTION PRIOR TO EMBARKATION.

Officers are required to undergo courses of instruction at the Royal Army Medical College and at Aldershot, lasting approximately six months, prior to their embarkation for India on first appointment.

Full details regarding these appointments and forms of application may be obtained from the UNDER-SECRETARY OF STATE FOR INDIA, MILITARY DEPARTMENT, INDIA OFFICE, LONDON, S.W.1. Applications should be submitted by the 14th July.

The Hartlepools Hospital. (100 Beds.)

HOUSE SURGEON (Male) required early in July. Previous Hospital experience essential. Appointment for one year. Salary £150, rising to £200 per annum after six months, board, residence, and laundry provided.

Applications, accompanied by copies of not more than three recent testimonials, to reach the undersigned not later than 9th July. P. NEVILLE HART, Secretary.

City of Bradford.

ASSISTANT SCHOOL MEDICAL OFFICER required (Male). Salary £600 per annum. The appointment will be subject to the provisions of the Local Government and Other Officers' Superannuation Act, 1922, and the successful applicant will be required to pass a medical examination. Forms of application may be obtained from the Medical Officer of Health, Town Hall, Bradford.

Applications, endorsed "Assistant School Medical Officer," and accompanied by copies of three recent testimonials, to be delivered to the undersigned not later than 7th July, 1928.

N. L. FLEMING, Town Clerk.

Town Hall, Bradford, 12th June, 1928.

St. Vincent's Orthopædic Hospital,

Eastcote, Middlesex. (135 Beds.)

Applications are invited for the post of RESIDENT MEDICAL OFFICER (Male). Candidates must be registered under the Medical Acts. The appointment is for six months in the first instance, but the holder may be reappointed for a further period. Salary is at the rate of £150 per annum, with board and lodging.

Applications, with copies of testimonials, should reach the Secretary to the Board of Management, St. Vincent's Orthopædic Hospital, Eastcote, Pinner, Middlesex, on or before July 16th. Vacant August 1st.

Gravesend and North Kent Hospital.

JUNIOR HOUSE SURGEON.

Applications are invited from fully qualified men for the above post.

The Hospital has 72 beds and cots, and extensive Out-patient Casualty and Ophthalmic Departments.

The appointment will date from July 15th, and will be for nine months at a salary of £100 per annum, and for a further six months as Senior House Surgeon at a salary of £200 per annum, with a possibility of a further six months as R.M.O., at a salary of £250 per annum. The appointment includes board, residence, and laundry.

Applications, with one copy of three recent testimonials, should be sent to the undersigned not later than July 2nd, 1928.

June 20th, 1928. C. E. CHAPMAN, Secretary.

The Devon Mental Hospital,

Exminster, near Exeter. (1400 Beds.)

REQUIRED, JUNIOR ASSISTANT MEDICAL OFFICER (MALE).

Candidates must be registered Medical Practitioners, and unmarried. Preference will be given to candidates who either have or are anxious to obtain a Diploma in Psychological Medicine. The Hospital is fully equipped with Operating Theatre, X-ray Installation, Bacteriological Laboratory, &c. Salary £300 per annum, rising by £25 per annum to £350, with board, apartments, laundry, and attendance.

The appointment is subject to the provisions of the Asylums Officers' Superannuation Act, 1909. Form of application to be obtained from the Clerk to the Devon Mental Hospital, Exminster, which must be completed and returned on or before 27th July, 1928

Cardiff Royal Infirmary.

(Associated with the Welsh National School of Medicine.)

APPOINTMENT OF HONORARY SURGEON TO THE EAR, NOSE AND THROAT DEPARTMENT.

Applications are invited for a vacancy in the office of Honorary Surgeon to the Ear, Nose and Throat Department. Candidates must be Doctors of Medicine or Masters of Surgery in one of the Universities of the United Kingdom, or Fellows of one of the Royal Colleges of Surgeons in the United Kingdom, or Fellows or Members of the Royal College of Physicians of London, or Fellows of one of the other Royal Colleges of Physicians in the United Kingdom, and the elected candidate shall confine himself in his practice to his specialty.

The present Honorary Assistant Surgeon to the Department is a candidate for the vacancy.

Each candidate is required to send 50 copies of his application and testimonials, stating age, qualifications, appointments held, &c., and endorsed "Honorary Surgeon to the Ear Nose and Throat Department," to reach the undersigned on or before Saturday, 14th July, 1928.

LEONARD D. REA, Secretary.

Cardiff Royal Infirmary.

Leeds Public Dispensary.—Notice is

hereby given that the Special Election Committee is prepared to receive applications for the post of

HONORARY PHYSICIAN.

Applications, with copies of testimonials, to be addressed to the Chairman of the Election Committee, Public Dispensary, North-street, Leeds, on or before Monday, 16th July, 1928.

City Mental Hospital, Nottingham.—

Wanted, JUNIOR ASSISTANT MEDICAL OFFICER (Male). Salary £350 per annum, all found, rising by £10 per annum to £400, with an additional £50 for D.P.M. and £10 for M.P.C. per annum respectively. Application, with fullest particulars and names of two referees, should be sent to the Medical Superintendent.

Newark Hospital and Dispensary (now

35, shortly 50 beds).—Wanted, a fully qualified RESIDENT HOUSE SURGEON (Male). Must be a good Anæsthetist. Salary £150 per annum, with board, residence, and laundry. Appointment for six months, or twelve if mutually desired.—For form of application apply to Henry Crampton, 27, Kirk Gate, Newark, Notts.

Leeds Public Dispensary.—Wanted,

SENIOR RESIDENT MEDICAL OFFICER (Male). Must have held posts of Resident Physician and Resident Surgeon. Salary £200 per annum, with board, residence, and laundry. Separate sitting-room. Applications, with copies of three recent testimonials, to be addressed to the Secretary of the Faculty, Public Dispensary, North-street, Leeds.

St. Mary's Hospitals, Manchester.—

Two HOUSE SURGEONS for the WHITWORTH ST. WEST HOSPITAL (Maternity); and two for the WHITWORTH PARK HOSPITAL (one Children's Department and one Gynæcological Department), each for a period of six months from the 1st August next. Salaries at the rate of £50 per annum with board and residence. Application, with copies of three testimonials, to be sent to the undersigned on or before the 11th July. R. RATCLIFFE, Secretary.

Lady Chichester Hospital, Hove.

(For Early Nervous Breakdowns.) (50 Beds.)

Medical Woman required as HOUSE PHYSICIAN for six months, commencing end of July. Salary at the rate of £100 per annum, with board, lodging, and laundry.

Also JUNIOR required, with board, lodging, and laundry, and honorarium at the rate of £50 per annum. The present Junior Officer is an applicant for the Senior post.

Applications must be made in writing and be accompanied by testimonials and sent to the Secretary, Mr. A. F. GRAVES, 117, North-street, Brighton, not later than Monday, 2nd July, 1928.

South Devon and East Cornwall

HOSPITAL, Plymouth. (185 Beds.)

RESIDENT SURGICAL OFFICER (Male) required. Salary at the rate of £100 per annum, with board, residence, and laundry. The appointment is tenable for six months and subject to renewal. Duties to commence at once. Candidates must be registered under the Medical Acts.

Applications, stating age and qualifications, together with copies of recent testimonials, to reach the undersigned by July 6th, 1928. ARTHUR R. CASH,

General Superintendent and Secretary.

23rd June, 1928.

The Jessop Hospital for Women,

Sheffield.

GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS. (145 beds.)

The Board of Management invite applications for the post of SENIOR RESIDENT OFFICER (Male) for one year from July 15th, 1928.

Salary at the rate of £250 per annum, with board, residence, and laundry.

Applications, stating age and experience, with copies of recent testimonials, should reach the undersigned before July 3rd.

H. B. SHELSWELL, Secretary.

The Jessop Hospital for Women,

Sheffield.

GYNÆCOLOGICAL AND MATERNITY DEPARTMENTS (145 Beds).

The Board of Management invite applications for the appointment of three ASSISTANT HOUSE SURGEONS (Male), for six months from July 15th.

Salary £100 per annum, together with board, residence, and laundry.

Applications, stating age, with copies of recent testimonials, should reach the undersigned before July 3rd.

H. B. SHELSWELL, Secretary.

Essex County Hospital, Colchester.
(160 Beds).

Wanted, ASSISTANT HOUSE SURGEON and REGISTRAR (Male). Salary £120, with board, washing, and residence. Medical and Surgical qualifications required.

Applications, with three recent testimonials, to be sent on or before Friday, 6th July, to

ALFRED G. BUCK, Secretary.

Royal Hospital, Richmond, Surrey.

The Board of Management invite applications for the appointment of JUNIOR HOUSE SURGEON (Male). Salary £100 per annum, together with board, residence, and laundry.

Candidates must be fully qualified and registered, and single.

Applications, stating age, experience, and copies of recent testimonials, should be addressed at once to the undersigned.

RICHARD ALLEN, Secretary.

Royal Berkshire Hospital (237 beds).

Wanted on July 9th, 1928, a HOUSE PHYSICIAN and a THIRD HOUSE SURGEON.

Wanted on August 9th, 1928, a FIRST HOUSE SURGEON.

They must be fully qualified and registered.

Salaries £150 per annum, with board, residence, and laundry.

Applications, with copies of recent testimonials, should be addressed to the undersigned.

HERMAN BURNEY, Secretary.

Reading, 25th June, 1928.

Wrexham and East Denbighshire War MEMORIAL HOSPITAL. (105 Beds.)

Two RESIDENT HOUSE SURGEONS (Male) required at above Hospital to commence on August 1st, 1928. Appointments are for a period of not less than six months. Salaries £100 per annum, with board and laundry.

Applications, stating age, nationality, experience, and qualifications, accompanied by three recent testimonials, to be sent to the undersigned not later than Wednesday, July 11th, 1928.

25th June, 1928. LESLIE SPENCER, Secretary.

Salford Royal Hospital (263 beds).

Applications are invited for the post of HOUSE PHYSICIAN (Male). Salary at the rate of £125 per annum.

The appointment is for a period of six months, with board and residence.

Candidates must be registered under the Medical Acts.

Forms of application, which may be obtained from the undersigned, must be delivered without delay.

By order of the Board.
GEORGE RUDDLE
General Superintendent and Secretary.

Salford Royal Hospital, Manchester. June 25th, 1928.

West Kent Joint Hospital Board.

INFECTIOUS HOSPITALS.

Applications are invited for the whole-time appointment of RESIDENT MEDICAL OFFICER (Male). Candidates must be between twenty-five and thirty-five years of age, and must be duly registered and qualified by law to practise both medicine and surgery in England. Candidates should have held an appointment as a Resident House Physician or House Surgeon at a General Hospital. Previous fever experience and the possession of the Diploma in Public Health will be considered additional qualifications. Married quarters are not available. Salary £400 per annum, together with furnished quarters, board, washing, and contributory pension.

The Hospitals are situate about three miles from Bromley South Station on the Southern Railway.

Forms of application containing further particulars may be obtained by sending stamped addressed foolscap envelope to the Secretary to the Joint Hospital Board, Park House, Bromley, Kent. Completed forms must be returned not later than Wednesday, the 11th July, at 12 noon. ARTHUR B. COOMBER, Secretary.

West Bromwich Union.

HALLAM HOSPITAL, WEST BROMWICH.

RESIDENT HOUSE PHYSICIAN.

Applications are invited from fully qualified Male Registered Medical Practitioners for the above appointment.

Preference will be given to applicants who have had hospital experience.

Salary £250 per annum.

Furnished quarters, rations, laundry and attendance will be provided by the Guardians.

Further particulars may be obtained from the undersigned.

Canvassing the Guardians, either directly or indirectly, is strictly prohibited and will be deemed a disqualification.

Applications, stating age, experience, and qualifications, accompanied by copies of recent testimonials, must be forwarded so as to reach me not later than first post on Monday, 9th July, 1928. By order.

A. H. WARD, Clerk.

22, Lombard-street, West Bromwich.
26th June, 1928.

The Mental Hospital, Berrywood,

near Northampton.—LOCUM TENENS MEDICAL OFFICER (Male) wanted for about 14 weeks, beginning July 9th. Salary £7 7s. per week, together with residence, board, and laundry. Applications, stating age, qualifications, nationality, and copies of recent testimonials, to be forwarded to the Medical Superintendent.

Clinical Pathologist.—Man, single,

fully qualified and registered. Well-equipped laboratories and other facilities for original work. Salary £400, increasing £20 yearly to £700, with board, lodging, laundry, and attendance, or £100 in lieu of these emoluments should the man appointed eventually live out. No deductions from salary for pension or other purposes. Appointment terminable on three months' notice. Apply in writing to Physician-Superintendent, CRICHTON ROYAL MENTAL HOSPITAL, Dumfries.

The Retreat, York.

Wanted immediately, a TEMPORARY ASSISTANT PHYSICIAN (Male), till about end of September. Six guineas weekly, with board, lodging, laundry, &c.

Previous experience not essential. Recently qualified man preferred.

Apply Medical Superintendent.

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Mental, requires POST (non-resident) temporary or permanent with Surgeon, Physician or Dental Surgeon.—Nurse, 11, Cleveland Mansions, Widley-road, Maida Vale. 'Phone: Maida Vale 1142.

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dence, &c. Part-time work required, preferably in W. or N.W. district. Terms and particulars, Miss J. M. Haselden, 13, Crossfield-road, Swiss Cottage, N.W.3.

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Midlands (North).— Partnership in rapidly growing Practice situated in farming and colliery district. House to be rented. One-sixth share worth £1000, with view to larger share at two years' purchase. Panel over 3000. Suitable investment for Scotch practitioner between thirty and thirty-five.—Apply, in first instance, to W. H. Grant, The Medical Agency, Watergate House, Adelphi, W.C.2.

Surrey. — Small well - established PRACTICE. Receipts £350 per annum. Panel 160. Accommodation £75 per annum. Suit someone with a little private means.—Apply, Peacock & Hadley, Ltd., 19, Craven-street, Strand, W.C.2.

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For Sale, City Consulting Practice, situated near The Bank. Fees mainly one and two guineas. Hours 10–5. Premium £1600.—Address, No. 288 THE LANCET Office, 423, Strand, W.C.2.

Partnership or Practice, in Spa or Southern County, wanted by M.D. Experienced. No obstetrical or contract work.—Address, No. 286, The LANCET Office, 423, Strand, W.C.2.

Surgical Partnership wanted in good- class Practice within 60 miles of London, with an income of £1000 to £1500. Good-sized house required with at least 5 bedrooms. Counties preferred—Surrey, Bucks, Hants, Sussex, not Thames Valley.—Write, in first instance, giving full details, to W. H. Grant, The Medical Agency, Watergate House, Adelphi, W.C.2.

Wanted, Practice of about £1500 in London Suburb or within 70 miles; Surrey, Sussex, Kent, or Middlesex preferred. Medium house with garden. Or would consider a larger one with a friend. Ample capital available. —Apply, No. 731, c/o Percival Turner, Ltd., 4, Adam-street, Adelphi, W.C.2.

South Coast, Non-panel.—Wanted by an experienced Practitioner, a good-class non-panel PRACTICE, preferably in the Southampton locality. Income £1000 to £1500. Medium-sized house with garden required. Ample capital.—Write, in first instance, giving full details, to W. H. Grant, The Medical Agency, Watergate House, Adelphi, W.C.2.

To Let, Surgery and Part use of waiting-room two days per week, full attendance. Suitable for an OPHTHALMIC SURGEON in house with four practitioners. Situated in good class district on South Coast.—Address, No. 287, THE LANCET Office, 423, Strand, W.C.2.

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2. ESSEX.—Good Hospital Town.—PARTNERSHIP.—A one-third share in an old-estab. mixed general Practice. Steady average income of about £1800. Panel of over 1500. Fees from 2s. 6d., mainly 3s. 6d. and 5s., visits 5s. upwards. Little Midwifery. Excellent accommodation for a bachelor. Good sport. Large scope. Premium 2 years' purchase. Ingoing partner should be keen on medicine, as Vendor does surgery.
3. HAMPSHIRE.—Old-estab. country PRACTICE situated in a very good residential district. Patients of all classes. Income last year nearly £1150, including appointment of £60. Panel of 450. Fees 3s. 6d. upwards, visits and medicine from 7s. Exceptionally good house, ample accommodation, electric light, 1½ acres of garden. Price freehold £3000. Premium £1500.
4. WEST OF ENGLAND.—In a very pretty district within 10 miles of a large town, an unopposed old-estab. Country PRACTICE worth last year over £500, including panel of about 200. Nearest opposition 5 miles. Visits 5s. upwards. Little or no Midwifery. Very nice house containing surgery and waiting room (separate from house) 2 reception, 3 bedrooms and dressing room, bathroom, &c. Beautiful garden in nearly 2 acres of ground. Price for freehold £1250 of which a mortgage of £900 could be arranged. Premium £650. Excellent prospect of increase. Hunting, shooting, golf, &c.
5. LINCS.—Old-estab. country PRACTICE within 5 miles of large town. Income about £1600, including Union appointment £77. Panel of over 1000. Advice and medicine 3s. 6d. upwards, visits and medicine 6s. 6d. to 12s. 6d. Very good and convenient house, electric light, modern bathroom. 1¼ acres of garden with tennis court. Large garage. Vendor's freehold price £2000. Premium 1½ years' purchase, cash.
6. PARTNERSHIP.—ESSEX (within 50 miles of London). In a small Country Town, the third share of very old-estab. Practice averaging £3500 p.a., including appts. and panel of 2200. Fees 2s. 6d. to 21s. Mid. 2 gns. upwards; 100 cases yearly. Good house containing consulting, waiting, rooms and dispensary, 2 reception, 4 bedrooms, bathroom, &c. Large garden. Garage. Rent £60 p.a. Premium 2 years' purchase. Held by remaining partner 25 years. Educational facilites,sport &c.,
7. LANCS.—Large Town. Old-estab. general PRACTICE. Income last year £1050, including panel of 1350. Surgery fees 3s., visits from 2s. 6d., medicine extra. Good house, Vendor's freehold price £1500 or would be let at £80 p.a. Premium £1500.
8. SOUTH OF ENGLAND.—Within a mile of the Sea.—In a pleasant Country Town (growing), amidst beautiful surroundings, an old-estab. PRACTICE (held 40 years by Vendor), averaging about £800 p.a., including appts. over £400 and panel of 600. Visits 2s. 6d. to 21s. Midwifery declined. Good house, 3 recep., 5 bedrooms, bathroom, &c. Garden. Price, freehold, £1700. Prem. 1½ years purchase. Sport of all kinds and excellent educational facilities. Purchaser should possess the D.P.H.
9. WEST MIDLANDS.—Residential town with beautiful surrounding country. Sound well-estab. PRACTICE. Income for the last 12 months £1480, including panel of about 600. Fees 3s. 6d. to 21s. Midwifery 3 to 8 gns. about 20 cases yearly. Commodious detached corner house, with ample accom. and large garden. Price for freehold £2000, part on mortgage. Prem. £1500. Cottage Hospital, and scope for surgery. Ill-health reason for sale.
10. SOUTH COAST.—FAVOURITE HOLIDAY RESORT.—Well-estab. non-dispensing PRACTICE. Average income about £1100, including panel of 1200. Consultations 2s. 6d. to 10s. 6d., visits 3s. 6d. to 21s. Practically no Midwifery. Very good house, in best position on sea-front. Price for leasehold (with 20 years to run) at a ground rent of £4 p.a., and renewable £2250. Prem. £1800.
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13. WILTS.—Unopposed Country PRACTICE. Old-estab., and averaging for the last year over £600, including panel of 500. Fees 2s. 6d. to 12s. 6d. Midwifery 3 to 5 gns; about 12 cases yearly. Very suitable house with 2 reception, 6 bedrooms, &c., and professional rooms. 1 acre of garden and paddock. Garage. Price £1200. Premium £900.
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17. CENTRAL WALES.—Good Hospital Town.—Old-estab. non-dispensing PRACTICE. Income over £1400, including £130 from appts. and panel of 500. Fees 5s. to 42s. Little Midwifery. Good house in centre of town, with pleasant garden. Price for freehold £1500. Premium £2100. Exceptional scope for surgery.
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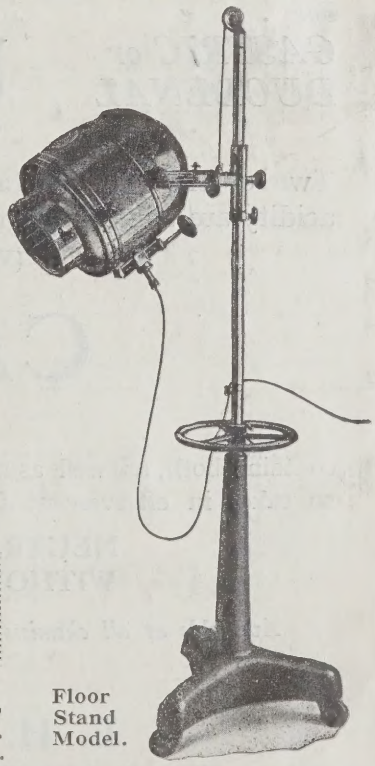

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